NOTICE OF FINAL RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 11. DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER QUALITY STANDARDS

PREAMBLE

1. Article, Part, or Section Affected (as applicable)	**Rulemaking Action**
R18-11-101	Amend
Appendix A	Amend
Table 1	Amend
Appendix B	Amend
Article 2	New Article
R18-11-201	New Section
R18-11-202	New Section
R18-11-203	New Section
R18-11-204	New Section
R18-11-205	New Section
R18-11-206	New Section
R18-11-207	New Section
R18-11-208	New Section
R18-11-209	New Section
R18-11-210	New Section
R18-11-211	New Section
R18-11-212	New Section
R18-11-213	New Section
R18-11-214	New Section
R18-11-215	New Section
R18-11-216	New Section
R18-11-217	New Section

2. Citations to the agency's statutory rulemaking authority to include the authorizing statute (general) and the implementing statute (specific):

Authorizing Statute: A.R.S. §§49-202(A), 49-203(A)(1)

Implementing Statute: A.R.S. §§ 49-221, 49-222

3. The effective date of the rule:

This rule will become effective 60 days after publication in the Register.

4. Citations to all related notices published in the *Register* as specified in R1-1-409(A) that pertain to the record of the proposed rule:

Notice of Rulemaking Docket Opening: 28 A.A.R. 125, January 7, 2022.
Notice of Proposed Rulemaking: 28 A.A.R. 2329, September 16, 2022.

5. The agency's contact person who can answer questions about the rulemaking:

Name:	Jonathan Quinsey
Address:	Department of Environmental Quality 1110 W. Washington St. Phoenix, AZ 85007
Telephone:	(602) 771-8193
Email:	Quinsey.Jonathan@azdeq.gov or PSWL@azdeq.gov
Website:	http://www.azdeq.gov/swpp

6. An agency's justification and reason why a rule should be made, amended, repealed or renumbered, to include an explanation about the rulemaking:

Background

Historically, a broad spectrum of Arizona's lakes, ponds, streams and wetlands have been protected under the Federal Clean Water Act (CWA). This protection includes regulating the discharge of pollutants to surface waters via the Arizona Pollution Discharge Elimination System (AZPDES). AZPDES has only been implemented to regulate discharges into "waters of the United States" (WOTUS).

The CWA does not define WOTUS, instead, it provides discretion for the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) to define WOTUS in their rules. Courts have heard a number of cases and issued rulings that effectively modify the extent of federal jurisdiction, and different Federal administrations have attempted to change the definition as well. Arizona leadership created the Surface Water Protection Program (SWPP) to provide clear and consistent regulation for stakeholders despite these changes to the jurisdictional reach of the Federal CWA. The SWPP is the result of a rigorous public process that has resulted in this effort to create a radically simple but effective approach to protect important state waters that are not WOTUS and therefore would not receive the protections of a WOTUS.

House Bill 2691 (2021) directs ADEQ to develop the SWPP and establish a variety of regulations by December 31, 2022. ADEQ is meeting that goal in this rulemaking by adopting Title 18, Chapter 11, Article 2 titled "Water Quality Standards for Non-WOTUS Protected Surface Waters." As part of the rulemaking to adopt standards for non-WOTUS protected surface waters, ADEQ must also modify the portion of the Arizona Administrative Code (A.A.C) that houses the Arizona-specific rules to implement Federal CWA requirements in the State. This rulemaking modifies Title 18, Chapter 11, Article 1 to conform with the requirements of the statute and to ensure that the Federal and State programs can co-exist. Additionally, this edition of the Arizona Administrative Register also includes a separate action which modifies Title 18, Chapter 9, Article 9 which contains the permitting program that implements the standards in Title 18, Chapter 11, Articles 1 and 2.

The scope of the SWPP rulemaking has changed since the initial legislation was passed. The original intent of the SWPP was to fill the gap between the Pre-2015 WOTUS definition and the Navigable Waters Protection Rule (NWPR). In August of 2021, the NWPR was vacated, removing the gap in regulation that the SWPP program was originally intended to fill. Still, ADEQ cannot overstate the importance of building a state-level program to protect surface waters and provide certainty to stakeholders about the future of surface waters in Arizona. At the time of this submission there is more change to the WOTUS definition on the horizon. The EPA is in the process of working on another new WOTUS rule through the regulatory process, and the Supreme Court has granted certiorari on a case that could impact how ADEQ implements the existing pre-2015 rule. ADEQ wants to be clear in this preamble that both of those actions could have an impact on Arizona's regulatory programs for surface water, as well as the rules adopted in this rulemaking.

Rulemaking Summary

This Notice of Final Rulemaking proposes to protect 35 non-WOTUS waters, 33 of which were previously listed on Appendix B of Article 1. Additionally, it adopts water quality-based standards that apply to those waters. The SWPP creates a dual-pronged approach for regulating surface water in Arizona. Waters that are considered Waters of the United States (WOTUS) will be regulated under the CWA program that is codified in Title 18, Chapter 11, Article 1 of the Arizona Administrative Code. Surface waters that are not WOTUS, but qualify to be listed on the Protected Surface Waters List (PSWL) as non-WOTUS protected surface waters, will be regulated by an Arizona-specific program established by ADEQ in this rulemaking in Title 18, Chapter 11, Article 2.

These two programs will exist in tandem, but a surface water reach will only be regulated by either the Federal program or the SWPP. There will be no joint jurisdiction of surface waters. During this initial SWPP rulemaking, ADEQ is striving to keep the two programs as similar as possible to provide consistency and clarity to permittees while the legal reach of the Federal CWA is in flux. The similarities between the two programs will ensure the original goal of the SWPP is met, and an ever-changing Federal definition of WOTUS will not result in significant compliance issues in Arizona as waters change between being regulated by the Federal program or the State program.

This NFRM is divided into two sections. The first section addresses the changes to Article 1, or the Federal portion of the program that is subject to EPA review. The second section explains the adoption of the new state program.

Modifications to the CWA Program - Article 1

Section 303(c) of the CWA requires that all states adopt and maintain water quality standards. Adopting water quality standards allows the state to assess the health of Arizona waters and provides a legal basis for controlling pollutants entering a protected surface water. Arizona Revised Statutes (A.R.S.) § 49-222 provides the state-level authorization for ADEQ to adopt those water quality standards.

ADEQ uses the adopted water quality standards as the backbone of Arizona's implementation of the federal permitting program implemented by ADEQ that's called AZPDES. The AZPDES program provides permits for discharges to WOTUS that limit the additions of pollutants to those surface waters using five general types of provisions:

1. Technology-based effluent limitations;
2. Water-quality-based effluent limitations;
3. Monitoring and reporting requirements;
4. "Boilerplate" conditions;
5. Special conditions, for example, site-specific standards that are applicable.

Designated Uses

Arizona's water quality standards under the CWA designate specific uses and then establish standards to protect those uses. The designated uses of a surface water are the most fundamental articulation of the use attainment goal in Arizona's aquatic or human environment. These adopted uses express goals for the water, such as supporting aquatic life and human activities. The concept of protected surface waters having designated uses is central to establishing appropriate water quality standards. Arizona's "menu" of designated uses listed at R18-11-104(B) provides for the protection and propagation of fish, shellfish, and wildlife and for recreation in and on the water. The current ADEQ-adopted designated uses are:

1. Domestic water source (DWS),
2. Fish consumption (FC),
3. Full body contact recreation (FBC),
4. Partial body contact recreation (PBC),
5. Aquatic and wildlife (cold water) (A&Wc),
6. Aquatic and wildlife (warm water) (A&Ww),
7. Aquatic and wildlife (effluent-dependent water) (A&Wedw),
8. Aquatic and wildlife (ephemeral water) (A&We),
9. Agricultural irrigation (AgI), and
10. Agricultural livestock watering (AgL).

ADEQ's four subcategories of aquatic and wildlife designated uses are meant to protect fish, shellfish, plants and wildlife (A&Wc, A&Ww, A&Wedw, and A&We). The A&We use is assigned based on the flow characteristics of the water itself. The A&Wedw use is assigned for waters that receive a permitted discharge. The A&Wc and A&Ww are assigned based on the relative elevation of the water, as well as the flow regime of the water. Intermittent and perennial protected surface waters located above 5000’ are assigned the A&Wc use and those below 5000’ are assigned the A&Ww use.

ADEQ protects water quality for “recreation in and on the water” with the full-body contact recreation (FBC) and partial body contact recreation (PBC) designated uses. These designated uses are intended to maintain and protect water quality for swimming, water-skiing, boating, wading, fishing, and other recreational uses. The FBC designated use is intended to protect public health when people engage in recreational activities that may involve full submergence in the water and likely ingestion of the water. The PBC designated use is intended to protect public health when people engage in water-based recreational activities where full submergence and ingestion of the water are unlikely such as wading or boating. The FC designated use is intended to protect human health when fish or other aquatic organisms are taken from a surface water for human consumption.

ADEQ has considered the use and value of surface waters for public water supply by establishing the domestic water source (DWS) designated use. The DWS designated use applies to a surface water that is used as a raw water source for drinking water supply. The water quality criteria for the DWS designated use were developed assuming that treatment is necessary to yield drinking water suitable for human consumption. The DWS designated use applies to a surface water that has a water intake located along it which uses the surface water as a raw water source.

Finally, ADEQ recognizes the use and value of surface waters for agricultural purposes by establishing the agricultural irrigation (AgI) and agricultural livestock watering (AgL) designated uses. These uses are intended to maintain and protect surface water quality so water can be used for crop irrigation or to water cattle and other livestock.

Water Quality Criteria

The term “criteria” is used when referencing water quality standards in a few different ways. The term is a reference to a specific part of a state water quality standard – that is, a water quality standard is composed of designated uses and the water quality criteria necessary to protect those uses. When Arizona adopts specific criteria they become the applicable regulatory requirements for protected waters. Criteria to protect designated uses in Arizona are expressed in three ways:

1. Chemical-specific concentrations;
2. Toxicity levels; or
3. Narrative statements representing a quality of water that supports a particular use of a surface water.

Chemical-Specific and Toxicity Criteria

The most direct way ADEQ protects a listed designated use is by adopting numeric surface water standards that establish specific limits on the concentrations of pollutants that will protect and maintain that use. ADEQ adopts criteria recommendations for pollutants when they are listed by the EPA as either a toxic pollutant, priority pollutant, or other type of regulated substance. When EPA lists a pollutant, they also publish an analytical test methodology that ADEQ can use to set numeric criteria that are appropriate for Arizona. These individual pollutant parameters are listed in A.A.C. Title 18, Chapter 11, Article 1, Appendix A, and R18-11-109. In adopting numeric water quality standards, ADEQ considers:

1. The effect of unique local water quality characteristics on the toxicity of pollutants;
2. The varying sensitivities of local affected aquatic populations to these pollutants; and
3. The extent to which the stream's natural flow is perennial, intermittent, effluent-dependent, or ephemeral.

Arizona Water Quality Standards Current State

ADEQ revises existing water quality standards under a timetable established by the CWA. The CWA requires the agency to review A.A.C. Title 18, Chapter 11, Article 1, once every three years. This process is called the triennial review. ADEQ makes modifications to Arizona's WOTUS water quality standards through the State's rulemaking process, however, those changes don't take effect until EPA approval is received. EPA is required to review any modifications ADEQ makes to Article 1 water quality standards and approves the standards that meet the requirements of the CWA.

The EPA must approve or disapprove ADEQ's standards within a set amount of time established in the CWA and implementing regulations. If EPA approves ADEQ's submitted standards, the EPA must notify ADEQ within 60 days of receiving the submittal of Arizona's standards, rules, and supporting documentation. If EPA disapproves of Arizona's surface water quality standards, it must do so within 90 days of receiving the complete submittal of the surface water quality standards rules. If the Regional Administrator disapproves a water quality standard, EPA must notify ADEQ, specifying:

1. Why the state standards are not in compliance with the CWA, and
2. The revisions ADEQ must make to its standards to assure compliance with the CWA before EPA could fully approve the standards. Under § 303(c)(4) of the CWA, EPA must federally promulgate water quality standards no later than 90 days after the date of notice of the disapproval described above if ADEQ does not adopt the necessary revisions as specified by EPA within that time.

ADEQ completed its obligation and submitted the regulatory modifications made during the 2019 triennial review to the EPA on November 19, 2019 (2019 TR). During the review process, EPA signaled to ADEQ that a non-trivial number of individual pollutant parameters developed by ADEQ and listed in A.A.C. Title 18, Chapter 11, Article 1, Appendix A, Table 1 for certain designated uses would be disapproved as they did not meet the requirements of the CWA.

ADEQ submitted a request to formally withdraw portions of the 2019 Triennial Review on December 21, 2021. Specifically, ADEQ withdrew modifications of the individual pollutant parameters established in Appendix A, Table 1 for the domestic water source, fish consumption, full-body contact, and partial body contact designated uses from review. The EPA signaled that the Federal government could not approve these standards for individual pollutants due to incorrect assumptions ADEQ made during their development. ADEQ is committed to resolving those issues before submitting the next triennial review package to the EPA.

As part of the EPA's concurrence with ADEQ's partial withdrawal of the 2019 TR, EPA took additional action to approve some changes to water quality standards (WQS) in the 2019 TR that ADEQ did not withdraw. EPA approved the revisions to the definitions, antidegradation, mixing zones, and variance standards adopted in 2019 on January 24, 2022. The EPA also approved portions of ADEQ's submittal that made minor formatting revisions and other corrections that were non-substantive.

The EPA has not acted in full on the changes to the 2019 TR individual pollutant parameters in Appendix A, Table 1 for the aquatic and wildlife cold, aquatic and wildlife warm, aquatic and wildlife ephemeral, aquatic and wildlife effluent-dependent water, agricultural irrigation, and agricultural livestock watering designated uses. EPA has communicated to ADEQ that they are waiting on the United States Fish and Wildlife Service to complete a consultation as to whether ADEQ's new standards are protective enough of Arizona's threatened and endangered species. EPA has approved some water quality standards submitted during the 2019 TR but not all.

The above facts have left Arizona with a patchwork of effective standards to apply to WOTUS, as illustrated below. Specifically:

1. For the domestic water source, fish consumption, full-body contact, and partial body contact designated uses, the individual pollutant parameters from Arizona's 2016 Triennial Review will apply until modified and approved by the EPA in an upcoming Arizona action.
2. For all aquatic and wildlife uses and agricultural irrigation use, the individual pollutant parameters from Arizona's 2016 triennial review are currently effective until EPA approves the modifications made during the 2019 TR.
3. Narrative standards and changes made to the definitions, antidegradation, mixing zone, and variance portions of Arizona's water quality standards in the 2019 TR are currently effective.

Effective Version of Recently Changed Standards For WOTUS		
Standard	**Current Effective Version of Standards 4/1/2022**	**The version of Standards Expected to be Effective when SWPP is Adopted**
Individual Parameters for Domestic Water Source Use	2016	2016
Individual Parameters for Fish Consumption	2016	2016
Individual Parameters for Full-Body Contact	2016	2016
Individual Parameters for Partial Body Contact	2016	2016
Individual Parameters for Aquatic and Wildlife Uses	2016	2019*

Individual Parameters for Agricultural Irrigation Use	2016	2019*
Individual Parameters for Agricultural Livestock Use	2016	2019*
R18-11-101. Definitions	2019	2019
R18-11-107. Antidegradation	2019	2019
R18-11-114. Mixing Zones	2019	2019
R18-11-122. Variances	2019	2019

*Dependent on USFWS review and EPA approval.

Arizona Water Quality Standards after this Rulemaking

This rulemaking revises Article 1 to align the individual criteria for pollutants that are published in the Arizona Administrative Code with the 2016 EPA-approved criteria. The 2019 water quality criteria that ADEQ is modifying were never approved and never took effect in the state. The tables below explicate the changes to the Arizona Administrative Code that will be made to align ADEQ's Article 1 rules with currently approved WQS.

Drinking Water Source Standards Alignment:

Parameter	CAS NUM	EPA Approved 2016 DWS standard (µg/L)	Withdrawn 2019 DWS standard (µg/L)
Acenaphthylene	208968	NA	420
Acrylonitrile	107131	0.06	0.006
Bis(2-chloroethoxy) methane	111911	NA	21
Bis(chloromethyl) ether	542881	NA	0.00015
Chloroethane	75003	NA	280

Chloronaphthalene beta	91587	560	2240
Chromium III	16065831	NA	10500
Dibenz (ah) anthracene	53703	0.005	0.350
Dibromoethane, 1,2-	106934	0.05	0.02
Dinitro-o-cresol, 4,6-	534521	28.0	0.6
Di-n-octyl phthalate	117840	2800	70
Endrin Aldehyde	7421933	NA	2
Guthion	86500	NA	21
Hexachloroethane	67721	2.5	0.9
Indeno (1,2,3 cd) pyrene	193395	0.05	0.4
Nickel	7440020	140 T	210 T
Nitrobenzene	98953	3.5	14
Nitrosodibutylamine	924163	NA	0.006
Nitrosodiethylamine	55185	NA	0.0002
N-nitrosodi-n-phenylamine	86306	0.005	7.1
N-nitrosodi-n-propylamine	621647	7.1	0.005
N-nitrosopyrrolidine	930552	NA	0.02
Parathion	56382	NA	42
Pentachlorobenzene	608935	NA	6
Tetrachlorobenzene, 1,2,4,5-	95943	NA	2.1
Trichlorophenol, 2,4,5-	95954	NA	700

Fish Consumption (FC) Alignment:

Parameter	CAS NUM	EPA Approved 2016 FC standard (µg/L)	Withdrawn 2019 FC standard (µg/L)
Benzene	71432	140	114
Benzo (a) pyrene	50328	0.02	0.1
Cadmium	7440439	84 T	6 T
Carbon tetrachloride	56235	2	3
Chloroform	67663	470	2133
Chloronaphthalene beta	91587	317	1267
Chlorpyrifos	2921882	N/A	1.0

Cyanide (as free cyanide)	57125	16,000 T	504 T
DDT and break down products	72548	0.0002	0.0003
Dichloromethane	75092	593	2222
Dinitro o cresol 4,6	534521	582	12
Dinoseb	88857	N/A	12
Diquat	85007	N/A	176
Endothall	145733	N/A	16000
Endrin Aldehyde	7421933	N/A	0.06
Guthion	86500	N/A	92
Hexochlorocyclohexane gamma	58999	1.8	5
Hexachlorocyclopentadiene	77474	580	74
Hexachloroethane	67721	3.3	1
Indeno (1,2,3cd) pyrene	193395	0.5	1
Malathion	121755	N/A	103
Mirex	2385855	N/A	0.0002
Nickel	7440020	4,600 T	511 T
Nitrobenzene	98953	138	554
Nitrosodibutylamine	924163	N/A	0.2
Nitrosodiethylamine	55185	N/A	0.1
Nitrosopyrrolidine	930552	N/A	34
Parathion	56382	N/A	16
Pentachlorophenol	87865	1,000	111
Permethrin	52645531	N/A	77
Picloram	26952205	2,710	1806
Tetrachlorodibenzopdioxin 2,3,7,8	1746016	5.00E-09	0.0000001
Tetrachloroethane 1,1,2,2	79345	4	32000
Tetrachloroethylene	127184	261	62
Thallium	7440280	7.2 T	0.07 T
Toluene	108883	201,000	11963
Tributyltin	688733	N/A	0.08
Trichloroethane 1,1,1	71556	428,571	285714
Trichloroethylene	79016	9	8

Full Body Contact (FBC) Alignment:

Parameter	CAS NUM	EPA Approved 2016 FBC standard (µg/L)	Withdrawn 2019 FBC standard (µg/L)
Acenaphthylene	208968	NA	56000
Acrylonitrile	107131	3	9
Aldrin	309002	0.08	0.27
Barium	7440393	98,000 T	186667 T
Benzene	71432	93	133
Benzfluoranthene 3,4	205992	1.9	47.0
Benzidine	92875	0.01	0.02
Benzo (a) anthracene	56553	0.2	47.0
Benzo (a) pyrene	50328	0.2	47.0
Benzo (k) fluoranthene	207089	1.9	47.0
Bis(2-chloroethoxy) methane	111911	NA	2800
Bis(chloroethyl) ether	111444	1	4.0
Bis(Chloromethyl) ether	542881	NA	0.02
Bromoform	75252	180	591
Cadmium	7440439	700 T	467 T
Carbon tetrachloride	56235	11	67
Chlordane	57749	4	13
Chlorine (total residual)	7782505	4000	93333
Chloroethane	75003	NA	93333
Chloroform	67663	230	9333
Chloronaphthalene beta	91587	74667	298667
Chromium (Total)	7440473	NA	100 T
Chrysene	218019	19	0.6
Cyanide (as free cyanide)	57125	18,667 T	588 T
DDT and break down products	72548	4	14
Di(2ethylhexyl) phthalate	117817	100	333
Di(2-ethylhexyl)adipate	103231	560000	3889

Dibenz (ah) anthracene	53703	1.9	47.0
Dibromoethane 1,2	106934	8400	2
Dichlorobenzene, 1,4-	106467	373333	373
Dichlorobenzidine 3,3'	91941	3	10
Dichloroethylene cis 1,2	156592	70	1867
Dichloromethane	75092	190	2333
Dichloropropene 1,3	542756	420	93
Dieldrin	60571	0.09	0.3
Dinitro o cresol 4,6	534521	NA	75
Dinitrotoluene 2,6	606202	2	7
Di-n-octyl phthalate	117840	373333	9333
Diphenylhydrazine 1,2	122667	1.8	6
Endrin	72208	280	1120
Endrin Aldehyde	7421933	NA	1120
Guthion	86500	NA	2800
Heptachlor	76448	0.4	1
Heptachlor epoxide	1024573	0.2	0.5
Hexachlorobenzene	118741	1	3
Hexachlorobutadiene	87683	18	60
Hexachlorocyclohexane alpha	319846	0.22	0.7
Hexachlorocyclohexane beta	319857	0.78	3
Hexachlorocyclopentadiene	77474	9800	11200
Hexachloroethane	67721	100	117
Hexochlorocyclohexane gamma	58999	280	700
Indeno (1,2,3cd) pyrene	193395	1.9	47
Isophorone	78591	1500.0	4912
Methoxychlor	72435	4667	18667
N nitrosodi n propylamine	621647	290	0.7
Nitrobenzene	98953	467	1867
Nitrosodibutylamine	924163	NA	0.9
Nitrosodiethylamine	55185	NA	0.03
Nitrosopyrrolidine	930552	NA	2
Nnitrosodimethylamine	62759	0.03	0.09

Nnitrosodiphenylamine	86306	0.2	952
Parathion	56382	NA	5600
Pentachlorobenzene	608935	NA	747
Polychlorinatedbiphenyls	1336363	19	2
Tetrachlorobenzene, 1,2,4,5-	95943	NA	280
Tetrachlorodibenzopdioxin 2,3,7,8	1746016	0.00003	0.0007
Tetrachloroethane 1,1,2,2	79345	7	23
Tetrachloroethylene	127184	9333	2222
Thallium	7440280	75 T	9 T
Toluene	108883	280000	149333
Toxaphene	8001352	1.3	4
Tributyltin	688733	NA	280
Trichloroethane 1,1,2	79005	25	82
Trichloroethylene	79016	280000	101
Trichlorophenol 2,4,6	88062	130	424
Trichlorophenol, 2,4,5-	95954	NA	93333
Trichlorophenoxy) propionic acid 2(2,4,5	93721	7467	29867
Vinyl chloride	75014	2	6

Partial Body Contact (PBC) Alignment:

Parameter	CAS NUM	EPA Approved 2016 PBC standard (µg/L)	Withdrawn 2019 PBC standard (µg/L)
Acenaphthylene	208968	N/A	56000
Barium	7440393	98,000 T	186667 T
Benzo (a) anthracene	56553	0.2	280
Benzfluoranthene 3,4	205992	1.9	280
Benzo (a) pyrene	50328	0.2	280
Benzo (k) fluoranthene	207089	1.9	280
Bis(2-chloroethoxy) methane	111911	N/A	2800
Bis(chloroethyl) ether	111444	1	4

Cadmium	7440439	700 T	467 T
Carbon tetrachloride	56235	980	3733
Chlorine (total residual)	7782505	4000	93333
Chloroethane	75003	N/A	93333
Chloronaphthalene beta	91587	74667	298667
Chromium (Total)	7440473	N/A	100 T
Chrysene	218019	19	0.6
Cyanide	57125	18,667 T	588 T
Dibenz (ah) anthracene	53703	1.9	280
Dichlorobenzidine 3,3'	91941	3	10
Dichloroethylene cis 1,2	156592	70	1867
Dichloromethane	75092	56000	5600
Dinitro o cresol 4,6	534521	3.733	75
Dinitrotoluene 2,6	606202	3733	280
Di-n-octyl phthalate	117840	373333	9333
Diphenylhydrazine 1,2	122667	1.8	6
Endrin Aldehyde	7421933	N/A	280
Guthion	86500	N/A	2800
Hexochlorocyclohexane gamma	58999	280	700
Hexachlorocyclopentadiene	77474	9800	11200
Hexachloroethane	67721	933	653
Indeno (1,2,3cd) pyrene	193395	1.9	47
Mirex	2385855	187	0.26
Nitrobenzene	98953	467	1867
Nnitrosodimethylamine	62759	0.03	0.09
N nitrosodi n propylamine	621647	290	0.7
Nnitrosodiphenylamine	86306	88667	952
Parathion	56382	N/A	5600
Pentachlorobenzene	608935	N/A	747
Pentachlorophenol	87865	28000	4667
1,2,4,5-Tetrachlorobenzene	95943	N/A	280
Tetrachloroethane 1,1,2,2	79345	56000	186667
Tetrachloroethylene	127184	9333	5600

Thallium	7440280	75 T	9 T
Toluene	108883	280000	149333
Toxaphene	8001352	933	1867
Tributyltin		N/A	280
Trichloroethylene	79016	280	467
2,4,5-Trichlorophenol	95954	N/A	93333
Trichlorophenoxy) propionic acid 2(2,4,5	93721	7467	29867

Aquatic and Wildlife Standards After the SWPP Rulemaking

In this rulemaking ADEQ has retained some other standards from the 2019 TR that have not yet been approved by the EPA. Specifically, the individual pollutant parameters for Aquatic and Wildlife and Agricultural uses. EPA has communicated to ADEQ that US Fish and Wildlife Service is still doing an Endangered Species Act (ESA) analysis on those changes. EPA originally had expected that review to be finished sometime in the summer.

The EPA has not completed their review by the time of publication of this rulemaking. ADEQ must complete the SWPP rulemaking by the end of the year. ADEQ has reviewed standards not yet reviewed by the EPA and has re-promulgated the most scientifically viable standards to are protect the uses they are associated with. ADEQ's actions in this regard will help insulate AZPDES permittees from any potential ESA liability. ADEQ is working with EPA to maintain the aquatic and wildlife criteria that the agency set during the 2019 TR. This rulemaking makes no modifications to those standards. The agency will continue to follow up with stakeholders regarding standards throughout the rulemaking process.

Appendix B Changes

ADEQ has invested considerable resources in making WOTUS evaluations during this rulemaking. For a water to be protected as an Article 2 water under the state program adopted in this rulemaking, ADEQ must make a determination that the water is not protected under our federal program in Article 1.

ADEQ's work product beyond this functional rulemaking includes developing a brand-new internal database that aggregates all the data ADEQ has gathered that can be used for WOTUS evaluations and producing non-

WOTUS reports for each state-protected water that have been published to our website alongside the draft rules. Each one of these non-WOTUS reports have been informally reviewed by the EPA before the publication of this NFRM. EPA has taken no affirmative or opposing action with regard to the non-WOTUS reports ADEQ has published and has simply responded to most non-WOTUS reports with a “no comment” designation. After the SWPP rulemaking is complete all Appendix B changes, which includes removing non-WOTUS waters, will be submitted to the EPA for final action pursuant to EPA's authorities under CWA sections 303(c) and (d).

Stakeholders can review all associated non-WOTUS reports at azdeq.gov/SWPP. This rulemaking removes the following waters and their associated designated uses from Appendix B:

				Aquatic and Wildlife				Human Health				Agricultural	
Watershed	**Surface Waters**	**Segment Description and Location (Latitude and Longitudes are in NAD 83)**	**Lake Category**	**A&Wc**	**A&Ww**	**A&We**	**A&Wedw**	**FBC**	**PBC**	**DWS**	**FC**	**AgI**	**AgL**
CG	Cottonwood Creek	Headwaters to confluence with unnamed tributary at 35°20'46"/113°35'31"		A&Wc				FBC			FC		AgL
CG	Cottonwood Creek	Below confluence with unnamed tributary to confluence with Truxton Wash			A&Ww			FBC			FC		AgL
CG	Red Lake	35°40'03"/114°04'07"			A&Ww			FBC			FC		AgL
CG	Rock Canyon	Headwaters to confluence with Truxton Wash				A&We			PBC				
CG	Truxton Wash	Headwaters to Red Lake				A&We			PBC				
CG	Wright Canyon Creek	Headwaters to confluence with unnamed tributary at 35°20'48"/113°30'40"		A&Wc				FBC			FC		AgL
CG	Wright Canyon Creek	Below confluence with unnamed tributary to confluence with Truxton Wash			A&Ww			FBC			FC		AgL
CL	Wellton Ponds	32°40'32"/114°00'26"			A&Ww			FBC			FC		
CL	Yuma Proving Ground Pond	32°50'58"/114°26'14"			A&Ww			FBC			FC		
LC	Boot Lake	34°58'54"/111°20'11"	Igneous	A&Wc				FBC			FC		AgL
LC	Camillo Tank	34°55'03"/111°22'40"	Igneous		A&Ww			FBC			FC		AgL
LC	Dry Lake (EDW)	34°38'02"/110°23'40"	EDW				A&Wedw		PBC				
LC	Little Ortega Lake	34°22'47"/109°40'06"	Igneous	A&Wc				FBC			FC		
LC	Mineral Creek	Headwaters to Little Ortega Lake		A&Wc				FBC			FC	AgI	AgL

LC	Mormon Lake	34°56'38"/111°27'25"	Shallow	A&Wc				FBC		DWS	FC	AgI	AgL
LC	Phoenix Park Wash	Headwaters to Dry Lake				A&We			PBC				
LC	Potato Lake	35°03'15"/111°24'13"	Igneous	A&Wc				FBC			FC		AgL
LC	Pratt Lake	34°01'32"/109°04'18"	Sedimentary	A&Wc				FBC			FC		
LC	Sponseller Lake	34°14'09"/109°50'45"	Igneous	A&Wc				FBC			FC		AgL
LC	Unnamed Wash (EDW)	Black Mesa Ranger Station WWTP outfall at 34°23'35"/110°33'36" to confluence of Oklahoma Flat Draw					A&Wedw		PBC				
LC	Vail Lake	35°05'23"/111°30'46"	Igneous	A&Wc				FBC			FC		AgL
LC	Water Canyon Reservoir	34°00'16"/109°20'05"	Igneous		A&Ww			FBC			FC	AgI	AgL
MG	Alvord Park Lake	35th Avenue & Baseline Road, Phoenix at 33°22'23"/ 112°08'20"	Urban		A&Ww				PBC		FC		
MG	Bonsall Park Lake	59th Avenue & Bethany Home Road, Phoenix at 33°31'24"/112°11'08"	Urban		A&Ww				PBC		FC		
MG	Canal Park Lake	College Avenue & Curry Road, Tempe at 33°26'54"/ 111°56'19"	Urban		A&Ww				PBC		FC		
MG	Cortez Park Lake	35th Avenue & Dunlap, Glendale at 33°34'13"/ 112°07'52"	Urban		A&Ww				PBC		FC	AgI	
MG	Desert Breeze Lake	Galaxy Drive, West Chandler at 33°18'47"/ 111°55'10"	Urban		A&Ww				PBC		FC		
MG	Dobson Lake	Dobson Road & Los Lagos Vista Avenue, Mesa at 33°22'48"/111°52'35"	Urban		A&Ww				PBC		FC		
MG	Encanto Park Lake	15th Avenue & Encanto Blvd., Phoenix at 33°28'28"/ 112°05'18"	Urban		A&Ww				PBC		FC	AgI	
MG	Granada Park Lake	6505 North 20th Street, Phoenix at 33°31'56"/ 112°02'16"	Urban		A&Ww				PBC		FC		
MG	Maricopa Park Lake	33°35'28"/112°18'15"	Urban		A&Ww				PBC		FC		
MG	Riverview Park Lake	Dobson Road & 8th Street, Mesa at 33°25'50"/ 111°52'29"	Urban		A&Ww				PBC		FC		
MG	Roadrunner Park Lake	36th Street & Cactus, Phoenix at 33°35'56"/ 112°00'21"	Urban		A&Ww				PBC		FC		

SP	Big Creek	Headwaters to confluence with Pitchfork Canyon		A&Wc				FBC			FC		AgL
SP	Bull Tank	32°31'13"/110°12'52"			A&Ww			FBC			FC		AgL
SP	Fly Pond	Fort Huachuca Military Reservation at 31°32'53"/ 110°21'16"			A&Ww			FBC			FC		
SP	Goudy Canyon Wash	Headwaters to confluence with Grant Creek		A&Wc				FBC			FC		AgL
SP	Grant Creek	Headwaters to confluence with unnamed tributary at 32°38'10"/109°56'37"		A&Wc				FBC		DWS	FC		AgL
SP	Grant Creek	Below confluence with unnamed tributary to terminus near Willcox Playa			A&Ww			FBC			FC		AgL
SP	High Creek	Headwaters to confluence with unnamed tributary at 32°33'08"/110°14'42"		A&Wc				FBC			FC		AgL
SP	High Creek	Below confluence with unnamed tributary to terminus near Willcox Playa			A&Ww			FBC			FC		AgL
SP	Lake Cochise (EDW)	South of Twin Lakes Municipal Golf Course at 32°13'50"/109°49'27"	EDW				A&Wedw		PBC				
SP	Moonshine Creek	Headwaters to confluence with Post Creek		A&Wc				FBC			FC		AgL
SP	Pinery Creek	Headwaters to State Highway 181		A&Wc				FBC		DWS	FC		AgL
SP	Pinery Creek	Below State Highway 181 to terminus near Willcox Playa			A&Ww			FBC		DWS	FC		AgL
SP	Post Creek	Headwaters to confluence with Grant Creek		A&Wc				FBC			FC	AgI	AgL
SP	Riggs Lake	32°42'28"/109°57'53"	Igneous	A&Wc				FBC			FC	AgI	AgL
SP	Rock Creek	Headwaters to confluence with Turkey Creek Alc						FBC			FC		AgL
SP	Snow Flat Lake	32°39'10"/109°51'54"	Igneous	A&Wc				FBC			FC	AgI	AgL
SP	Soldier Creek	Headwaters to confluence with Post Creek at 32°40'50"/109°54'41"		A&Wc				FBC			FC		AgL
SP	Turkey Creek	Headwaters to confluence with Rock Creek		A&Wc				FBC			FC	AgI	AgL
SP	Turkey Creek	Below confluence with Rock Creek to terminus near Willcox Playa			A&Ww			FBC			FC	AgI	AgL
SP	Ward Canyon	Headwaters to confluence with Turkey Creek		A&Wc				FBC			FC		AgL
SP	Willcox Playa	From 32°08'19"/109°50'59" in the Sulphur Springs Valley	Sedimentary		A&Ww			FBC			FC		AgL

Adding Drinking Water Use for Bonita Creek in Appendix B

During the rulemaking process, ADEQ received information that Bonita Creek, an indirect tributary to the East Verde River, is used as the source of water for the Bonita Creek Water Company. Pursuant to this information, ADEQ is adding a Domestic Water Source (DWS) use to this water.

The Surface Water Protection Program – Article 2

This portion of the preamble outlines the adoption of the Arizona Surface Water Protection Program (SWPP).

Economic, Social and Environmental Cost-Benefit Analysis

Outside of the process deployed to determine the extent of federal jurisdiction under the currently effective WOTUS rule, the most overarching analysis ADEQ has performed in this rulemaking is the economic, social, and environmental cost/benefit analysis required for SWPP implementation. A.R.S. §49-221 requires that the Director adopt "procedures for determining economic, social and environmental costs and benefits." The procedure for determining the economic, social and environmental costs and benefits of the new SWPP program will be applied in two ways:

1. If the water is not categorically excluded from the SWPP as defined in § 49-221 and the economic, social and environmental benefits of adding the water outweigh the economic, environmental and social costs of excluding the water from the list, the water *may* be added to the PSWL.
2. In adopting water quality standards at a particular level or for a particular water category for non-WOTUS protected surface waters.

This rulemaking addresses both statutory requirements and includes a regulatory procedure for conducting this crucial analysis in R18-11-213. This rulemaking includes water quality standards for non-WOTUS protected surface waters that have been adopted at a particular level for waters that will be protected by the SWPP. As mentioned in the background section of this preamble, the definition of water quality standard is wide-ranging and encompasses every rule adopted in this article. This rulemaking also adds waters to the PSWL where ADEQ has demonstrated that the benefit of adding that water to the list outweighs the cost.

Although the requirements specific to the SWPP were introduced in HB2691 (2021), ADEQ has performed cost/benefit analyses in a number of historical contexts. A.R.S. § 41-1055 has required a formalized Economic Impact Statement for agency rulemakings since 1995. As these analyses require specialized economic knowledge, the agency has frequently relied on outside expertise to perform baseline economic reports that inform our policy decisions. To conduct the wide-ranging economic analysis required by the SWPP and § 41-1055, ADEQ contracted with McClure Consulting, LLC (McClure) to produce two separate reports to inform the procedure adopted in R18-11-213 and the economic analysis deployed by ADEQ in this rulemaking. The first report was delivered on July 7, 2021, and a second report was delivered on April 29, 2022. This preamble and the accompanying technical paper available at http://azdeq.gov/node/8173 source extensively from those two reports.

The first report drafted by McClure focused generally on the process ADEQ could use to model economic, social and environmental costs and benefits. The second report provides deeper analysis and delves into specific case studies that ADEQ has used to display how the procedures adopted in the rulemaking will be applied. In addition to the reports produced by McClure, ADEQ conducted a 50-state survey to provide an overview of how other states conduct similar analyses. That 50-state report is also available for stakeholder review on ADEQ's website at http://azdeq.gov/node/8173.

McClure Report #1

For the first report, ADEQ asked McClure to produce recommendations for a model-based approach to demonstrate how the procedures adopted in the SWPP rulemaking might work. ADEQ is familiar with modeling in several environmental contexts, so pursuing a model-based approach is a logical outgrowth of institutional expertise within the agency. ADEQ can provide accurate costs of our own regulatory programs through known and quantifiable internal costs. Additionally, ADEQ can estimate costs to permittees through our historic economic impact statements associated with rulemaking. However, for environmental benefits, there are no easily ascertainable market prices as the benefits often relate to "goods and services" that are not traded in markets and therefore are not subject to market-based pricing.

Since there is a need for the economic value of these non-market environmental resources to be expressed in market prices for the purposes of the SWPP rulemaking, ADEQ's consultants provided a literature review for valuing non-market goods and worked with agency staff to evaluate how they could be used to build the statutorily required analysis. Then, McClure built a draft framework for an economic model to display how they would estimate the market value of those resources. The initial report presented the agency with a number of different techniques and research the consultant relied on to build the required procedure.

Modeling Elements and the Benefit Transfer Approach

ADEQ recommends interested stakeholders read the consultant's report for more in-depth information, but this section provides a summary of their work. In their first report, McClure Consulting proposed various valuation methods that all came with their own unique practical and scientific challenges. For example, one such suggestion was using a survey-based methodology. A survey-based methodology would have required ADEQ to use a survey process to derive hypothetical costs and benefits by surveying individuals and businesses who used potentially protected waters. Then, ADEQ would use that input to derive some sort of market cost or price for the protection the SWPP rules would provide.

While the idea of a survey-based methodology seemed viable, the kind of information ADEQ would need to gather from a survey process would require the agency to do an additional level of analysis beyond the scope of the SWPP rulemaking. Although HB2691 prescribed an analysis, the SWPP enabling legislation allowed ADEQ to develop the most reasonable form for that analysis. Given these real-world challenges of developing a valuation procedure, the consultant recommended ADEQ leverage the concept of benefit transfer as a valuation methodology. This approach had substantial appeal to ADEQ as it seemed to be the most reasonable way to conduct the sweeping analyses required to adopt the SWPP within the timeline required by the statute.

The benefit transfer method is a tool that is used to estimate economic values for environmental costs and benefits by transferring available information from studies already completed in another location and/or context. For example, values for recreational fishing in a particular state may be estimated by applying measures of recreational fishing values from a study conducted in another state. Thus, the basic goal of benefit transfer is to estimate benefits for one context by adapting an estimate of benefits from some other context. ADEQ's consultants informed the agency that benefit transfer is often used when it is too expensive and/or there is too little time available to conduct an original valuation study, yet some measure of cost or benefits is needed. It is important to note that benefit transfers can only be as accurate as the initial study. However, this approach comes with challenges of its own, including finding case studies that align with the local policy under consideration.

Based on the consultant's recommendation in the first report, ADEQ expressed interest in using the benefit transfer approach during the deployment of our SWPP program. This approach also gave ADEQ a way to explicitly incorporate opportunities for stakeholder input to supplement and validate the values generated by the model. ADEQ's consultants conducted an extensive search for studies that would be relevant for this approach. Those studies are listed in the consultant's paper and reproduced in the section of this preamble that requires ADEQ to disclose the studies the agency relied on during the rulemaking action.

The next step was to construct a list of inputs that would be relevant in the final model. ADEQ once again relied heavily on the consultant's recommendations, and the first suggestions were wide-ranging and included everything from administrative to scientific influences. The modeling elements proposed by the contractor are discussed at length in the first report and modified heavily in the final report which is addressed later in this preamble. ADEQ has not reproduced the elements suggested in the first report because they were modified in the second report. The appendix list of the first report is annotated with questions and commentary intended to help guide the benefit/cost modeling process for stakeholders who are interested in the evolution of agency thinking.

The initial framework in the first report also did not focus on applying the model in specific situations or for "certain category of waters," although one high-level process did entertain the idea of setting individual pollutant parameters for designated uses. After publication ADEQ and the McClure began work on scoping the second leg of our review to narrow that framework and apply it in the specific contexts.

McClure Report #2

The process of developing the first McClure report highlighted areas that needed further analysis. Simply put, ADEQ determined that the process of assigning "costs" or "value" in a vacuum was untenable for the purposes of SWPP adoption. Surface waters in Arizona have unique characteristics that require a valuation approach that considers those local characteristics. The SWPP enabling legislation contemplated this and contains the requirement that ADEQ consider "the unique characteristics of [Arizona's] surface waters." With this in mind, ADEQ entered into an additional contract with McClure to hone the analysis to meet that specific requirement of the statute. ADEQ received the first draft report on March 2, 2022 and provided input to McClure. The final report and model were delivered on April 29, 2022 and is posted at http://azdeq.gov/node/8173 on the Stakeholder Meetings and Materials link.

Example Water Analysis

The first McClure report contains a section that explains the limitations of the recommended benefits transfer approach. The largest limitation on the recommended approach was simply that it wasn't geared towards any particular real-world scenario. Adjusting water quality standards and applying them to water bodies in a hypothetical situation simply does not work. To develop a methodology, ADEQ needed to first develop a framework for analysis. ADEQ and our consultants prepared three categories of “example waters” to meet the requirement that standards be adopted for a “particular water category” and then be considered to potentially be added to the PSWL. ADEQ developed three categories of waters as a framework for the SWPP cost/benefit analysis:

Class 1 – Sky Island Streams. Representative Water – Stronghold Canyon East. Waterbody ID: AZ15050201-299

Sky Islands are isolated mountain ranges in southeastern Arizona. Some of the mountains rise more than 9,000 feet above the surrounding desert floor making the lowlands and high peaks drastically different. These mountains contain a number of potentially perennial or intermittent surface waters that may have no significant nexus to a traditionally navigable water as the water generally infiltrates or evaporates in the deserts surrounding the sky island. In the mountains, these streams provide valuable habitat, recreational opportunities, and some may hold a level of cultural significance.

ADEQ has picked Stronghold Canyon as an example for this category of waters. The Cochise Stronghold is located in southeast Arizona within the Dragoon Mountains at an elevation of approximately 5,000 ft. This woodland area lies in a protective rampart of granite domes and sheer cliffs which were once the refuge of the Apache Chief Cochise and his people. Perennial springs feeding streams in this area provide water to animals and historically to the people that lived in the area. Now located within the Coronado National Forest, the area remains a popular recreation destination with opportunities for hiking, birding, climbing, mountain biking and camping.

Class 2 – Isolated Lakes. Representative Water – Pintail Lake, Show Low. Waterbody ID: AZ15020005-5000

Pintail Lake is a man-made lake and wetland created from treated water from the City of Show Low. Developed in 1979, it is recognized nationally as one of the first of its kind in the country. Water covers approximately 50 to 100 acres at any given time due to seasonal or climate variations. The lake is an important source of water for local and migrating wildlife, including a variety of birds and big game such as elk and pronghorn antelope. Hunting is allowed in the area and Pintail Lake is popular with waterfowl hunters between November and January. The area is managed in partnership with the City of Show Low, Arizona Game and Fish Department, Apache-Sitgreaves National Forest, and other parties, including the White Mountain Audubon Society.

Class 3 – Ecologically, Culturally, or Historically significant water. Representative Water – Quitobaquito Pond.

Quitobaquito pond is located in the Organ Pipe Cactus National Monument, which was created in 1937 by President Franklin Roosevelt. Historically, the spring-fed pond was located on a prehistoric trade route known as the Old Salt Trail. This route was used to trade salt, obsidian, seashells, and other commodities from the salt beds of Sonora, Mexico. The pond remains culturally significant to the Tohono O'odham Nation located in southern Arizona. From the 1860s and until the area was designated a national monument, the water was used by the settlers for their homes and businesses and to irrigate fruit trees and crops. The pond is home to a species of turtle and snail unique to the pond, as well as a butterfly that coexists solely with a plant found only in this area.

ADEQ's Final Model:

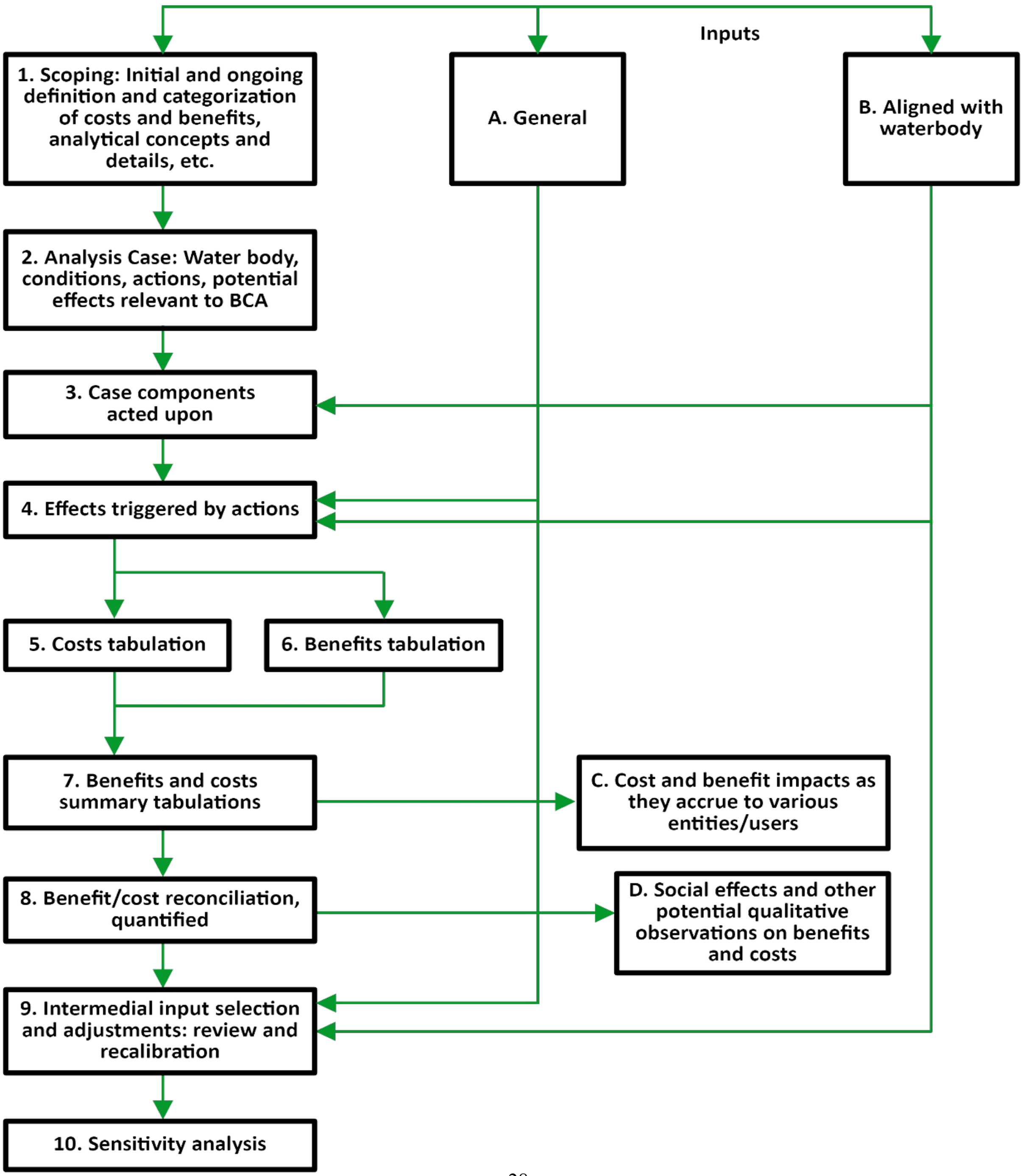
After developing the categories of waters for analysis, ADEQ's consultants began the work to build the final model. The valuation framework used by the contractor includes national and state-level costs as well as estimates for benefits, along with a proposed framework for evaluating benefits at smaller levels of geography. The resulting ADEQ cost/benefit model was adapted by the Consultants to address the types of policy actions that are most likely to occur in Arizona. These adaptations took into account the unique nature of Arizona's surface waters that are described in more detail in the consultant's final report.

The currently effective CWA program deployed in Arizona works. The water quality standards that ADEQ has adopted as part of that program protect the important uses of Arizona's surface waters without creating undue burdens for those who need an AZPDES permit. The contractor's framework models the adopted SWPP program allows ADEQ to demonstrate the costs/benefits of adopting a state-level program that has similar standards to those in our federal program. ADEQ's consultants used portions of that model but used Arizona specific variables to come to their final result.

The importance of using an ESE analysis framework similar to that of the CWA is because the standards in the SWPP borrow significantly from those adopted to protect waters under the CWA program. This is especially true for the numeric standards adopted by ADEQ in this rulemaking. As mentioned elsewhere in this preamble, ADEQ spends a significant amount of time reviewing the science behind setting numeric standards for protected surface waters. The amount of science that has been done to establish the formulas ADEQ uses to set those standards simply is not replicable by ADEQ in the timeframe available for this rulemaking.

Additionally, the numeric standards that are set by ADEQ for the Federal portion of the program already include Arizona specific information where appropriate. ADEQ uses Arizona specific species lists when setting numeric criteria for aquatic and wildlife uses. In the 2019 TR, ADEQ attempted to use Arizona specific body weight and consumption rates for human health and safety uses.

Thus, the consultants final model implements that unique process into a unified model, where costs/benefits are assessed through an already adopted level of water quality standards to categories of waters that represent those most likely to be protected by the SWPP. The figure below is another conceptual flow chart that ADEQ has included in this preamble to illustrate the inputs the consultants used to model the cost/benefits of the new SWPP program. Key components of the model are also described below (letters and numbers match the diagram labeling and are therefore not necessarily sequential).


Inputs
1. Scoping: Initial and ongoing definition and categorization of costs and benefits, analytical concepts and details, etc.
A. General
B. Aligned with waterbody
2. Analysis Case: Water body, conditions, actions, potential effects relevant to BCA
3. Case components acted upon
4. Effects triggered by actions
5. Costs tabulation
6. Benefits tabulation
7. Benefits and costs summary tabulations
C. Cost and benefit impacts as they accrue to various entities/users
8. Benefit/cost reconciliation, quantified
D. Social effects and other potential qualitative observations on benefits and costs
9. Intermedial input selection and adjustments: review and recalibration
10. Sensitivity analysis

Explanation of Inputs.

Item A. Inputs, general:

1. Standards by water type, if/as applicable to current or future modeling efforts, and relationships to uses, etc.
2. Per-user dollar values tied to specific water use types, such as specific recreation activities, etc.
3. Cost factors: permitting or other compliance for public and private entities; ADEQ administrative costs based on categories shown in Appendix D, estimated by ADEQ staff for each of the three case studies classes, for use in the BCA model; possible user charges per unit by type; and consideration of other factors such as health impacts (as burden), as applicable or practical at this level of analysis (current or future). Factors may be directly quantifiable in economic terms, and/or indirectly quantifiable in economic terms or as social effects (as relevant).
4. Benefit categories:
   a. Directly quantifiable economic benefits, as willingness to pay ("WTP") dollar values on a per-household, per-acre basis.
   b. Benefits applicable, as dollars on some unit basis, to participants in specific activities, recreational or other.
   c. Benefits indirectly quantifiable in economic terms, or identifiable and addressed on qualitative terms only, including economic and social effects (as relevant).
5. Discount rates to apply to future costs and the stream of annual benefits both local and non-local households would experience.

Item B. Inputs, aligned with WTP categorical distinctions:

1. Distinctions include: forested, non-forested, and possible other categories, and other conditions specific to the waterbody.
2. Cost factors: any variation from general factors based on specifics of waterbody; opportunity costs.
3. Selection of local and non-local affected households, as described in relation to Figure 1 Scoping.

Item 9. Recalibration, as appropriate:

1. Maintaining "adding up" integrity in the course of producing benefit and cost estimates related to any single waterbody. This is accomplished primarily by examining estimates for individual waterbodies in

comparison with Arizona-wide estimated annualized totals for costs and WTP benefits, which would be initially informed by EPA documentation of estimated state-level costs and benefits.

Item 10. Sensitivity analysis component:

1. Reviewing how the overall model structure relates to the specific analysis conditions in ways that could tend to over- or underestimate costs and/or benefits.
2. Considering whether and to what extent results of a BCA could be unduly skewed or otherwise unusually sensitive, based on some modeling input or some particular characteristic of the waterbody being analyzed. This would be addressed initially by reviewing: 1) market area designations, 2) identified cost and benefit categories, and 3) cost and benefit factors applied to the estimating model. If warranted by the review, inputs and factors may then be modified, modified model results examined for effects of the sensitivity testing, and modeling components adjusted if necessary, along with accompanying notations.

Item C. Affected entities:

1. For benefits: geographic and demographic general description of affected households that are both "local" and "non-local" with respect to waterbody.
2. For costs: types of entities affected, with costs allocated among them to extent possible.

Item D. Social effects:

1. Documenting Environmental Justice conditions. Data on disadvantaged minority populations within local and non-local market areas are compiled as part of the documentation of demographic conditions within these areas, which at a minimum, for all populations, includes number of households and household incomes as well as racial/ethnic designations by geographic sub-area.
2. Categories that may be quantified in the future, but in the interim addressed qualitatively as discussed in the following section.

Modeling Results

ADEQ recommends that stakeholders review the final contractor report for a full discussion of the cost/benefit modeling analysis, but quantitative aspects are summarized in the tables below.

Cost and Benefit Factors	Class 1 - sky island stream - Cochise Stonghold Cyn.	Class 2 - isolated lake - Pintail Lake & marshes	Class 3 - unique waterbody - Quitobaquito Pond
Size (acres or acre-equivalents (Class 1))	21.76	65.00	0.50
Forested?	Yes	Yes	No
Costs and benefits over a 20-yr. period, discounted			
Costs			
404 permits	$9,344	$9,344	$9,344
Mitigation			
ADEQ Admin	$62,641	$111,067	$74,938
Total	**$71,985**	**$120,411**	**$84,282**
Benefits, from willingness-to-pay (WTP) factors			
Local	$5,509,181	$7,840,675	$3,151
Non-local	$8,635,112	$54,780,036	$4,066
Total	**$14,144,293**	**$62,620,711**	**$7,216**
Arizona component	$14,982,646	$68,136,424	$8,045
Benefit/cost comparison			
Total benefits, Arizona	$14,982,646	$68,136,424	$8,045
Total costs	$71,985	$120,411	$84,282
Benefits/costs (first number in ratio: __ to 1)	208.1	565.9	0.10

Of the three case-study classes, class 1 and class 2 both had benefit/cost ratios well in excess of 1. Class 3 had the opposite condition – a very low cost/benefit ratio of 0.1. A meaningful issue, however, is that the willingness to pay approach to estimate benefits does not encompass a way of capturing the value for the vital role of the Quitobaquito Pond in protecting rare and endangered species. The low cost/benefit ratio of protecting Qutiobaquito Pond led to ADEQ excluding this class of water bodies from potential inclusion in the SWPP.

Based on the modeling efforts provided by the contractors, this rulemaking proposes to protect class 1 and class 2 waters with water quality standards that are similar to those applied to the federal program. The modeling effort has demonstrated a significant benefit for protecting these surface waters, especially when considering the context that there are no current discharge permits to any of the surface waters protected by the SWPP. If, in the future, ADEQ proposes to protect a water with a discharge permit, the agency expects that the costs considered by the analysis would dramatically change.

Arizona SWPP Water Quality Standards, Generally

ADEQ's ESE model showed that the benefits of protecting certain classes of waters with water quality standards similar to those adopted for Arizona's CWA program outweighed the costs. However, the SWPP enabling legislation restricts the water quality standards that ADEQ can adopt and the permitting provisions that can be applied to discharges to non-WOTUS protected surface waters. This is best summarized in how the legislation redefined the word "permit." A.R.S. §49-201(32) defines the word permit as follows: "[f]or the purposes of regulating non-WOTUS protected surface waters, [a] *permit shall not include provisions governing the construction, operation, or modification of a facility except as necessary for the purpose of ensuring that discharge meets water quality-related effluent limitation or to require best management practices* for the purpose of ensuring that a discharge does not cause an exceedance of an applicable surface water quality standard."

The restrictions present in the legislation mean the SWPP will regulate discharges to waters primarily based on water quality-based effluent limitations (WQBELs). WQBELS regulate discharges based upon the *actual impact* that a discharge has on receiving waters. The water quality standards established for a particular waterbody serve as the basis for imposing water-quality-based treatment controls in AZPDES permits.

<u>The Difference between CWA and SWPP Standards, Generally</u>

To reiterate an earlier portion of this preamble, water quality standards are laws or regulations that consist of:

1. The designated use or uses of a waterbody;
2. The water quality criteria that are necessary to protect the use or uses; and
3. An antidegradation policy.

The SWPP borrows significantly from the Federal CWA structure with a few crucial distinctions. ADEQ *may not* adopt or apply water quality standards for non-WOTUS protected surface waters based on:

1. Antidegradation
2. Antidegradation Criteria
3. Outstanding Arizona Waters

Because antidegradation standards and criteria are prohibited from being used in AZPDES permits for discharges to non-WOTUS protected surface waters, the rules that ADEQ is adopting in Title 18, Chapter 11, Article 2 do not include those types of water quality standards. Additionally, permits and conditions for discharges to non-WOTUS protected surface waters are prohibited from implementing any sections of the CWA directly, including sections 301, 302, 306, 307, 308, 312, 318, and 405. Permits issued for these discharges to non-WOTUS waters are not subject to review by the EPA. ADEQ is prohibited from adopting or applying rules regarding the following discharges to non-WOTUS protected surface waters:

1. Except as applied to discharges from publicly owned treatment works, requirements specific to new sources or new dischargers under the CWA.
2. Except for discharges from publicly owned treatment works, technology-based effluent limitations, standards, or controls, including new source performance standards, under sections 301(b), 304(b), and 306 of the CWA.
3. Requirements to express all permit limitations, standards, or prohibitions for a metal solely in terms of total recoverable metal.
4. Requirements for review and approval of permits by the USEPA before issuance.

SWPP Definitions – R18-11-201

Regulatory definitions provide clarity and certainty to the public when they engage with ADEQ's regulations. This rulemaking adopts 30 discrete definitions for terms that appear in Article 2. Generally, ADEQ has included specific definitions for designated uses, flow conditions, categories of surface waters, and terms that are defined in the enabling legislation that are implemented for user convenience.

ADEQ has determined some definitions were necessary during the rulemaking process due to stakeholder feedback. The definitions in Article 2 do not deviate significantly from the comparable definitions adopted in the federal program.

SWPP Applicability – R18-11-202

The SWPP enabling legislation prescribes limitations on what types of waters the program ADEQ can protect under this program. ADEQ has drafted R18-11-202 to make the types of waters that the SWPP applies to abundantly clear.

SWPP Designated Uses – R18-11-203

Adopting designated uses for a surface water allows ADEQ to provide a fundamental articulation of its role in Arizona's aquatic or human environment to the public. These adopted uses express goals for the water, such as supporting aquatic life and human activities. The concept of protected surface waters having designated uses is central to establishing appropriate water quality standards and setting those standards at an appropriate level.

Pursuant to the information produced by our economic, social, and environmental cost/benefit analysis, ADEQ is endeavoring to keep as many of the aspects of the new SWPP as similar as possible to the traditional AZPDES program that has already been deployed in Arizona. As a result, this rulemaking includes eight designated uses that are similar to the 10 uses that Arizona has developed for the CWA program. Notably, the SWPP does not apply to ephemeral waterways, therefore, ADEQ will not adopt an aquatic and wildlife (ephemeral) use for the SWPP. ADEQ has determined at this time that there are no EDWs eligible for protection under the SWPP, therefore, ADEQ is not currently adopting EDW standards for non-WOTUS protected surface waters. Standards that cannot be applied to waters only create costs and provide no benefits. Arizona's non-WOTUS protected surface waters list will use the following designated uses:

1. Domestic water source AZ (DWSAZ),
2. Fish consumption AZ (FCAZ),
3. Full body contact recreation AZ (FBCAZ),
4. Partial body contact recreation AZ (PBCAZ),
5. Aquatic and wildlife (cold water) AZ (A&WcAZ) (acute and chronic),
6. Aquatic and wildlife (warm water) AZ (A&WwAZ) (acute and chronic),
7. Agricultural irrigation AZ (AgIAZ), and
8. Agricultural livestock watering AZ (AgLAZ).

Future rulemakings for non-WOTUS protected surface waters may add or revise these designated uses. The two subcategories of aquatic and wildlife designated uses adopted in the SWPP are meant to protect fish, shellfish, plants, and wildlife. In this initial version of the rulemaking, the A&WcAZ and A&WwAZ are assigned based on the relative elevation of the water, as well as the flow regime of the water. Intermittent and perennial protected surface waters located above 5000' are assigned the A&Wc use and those below 5000' are assigned the A&Ww use. These designations comport with the longstanding science the agency has used to assign the similar uses in the Federal program.

The SWPP will ensure that non-WOTUS protected surface waters will maintain water quality for recreation in and on the water with the full-body contact recreation (FBCAZ) and partial body contact recreation (PBCAZ) designated uses. These designated uses are intended to maintain and protect water quality for swimming, boating, wading, fishing, and other recreational uses. The FCAZ designated use is intended to protect human health when fish or other aquatic organisms are taken from a surface water for human consumption. ADEQ has considered the use and value of surface waters for public water supply by establishing the domestic water source (DWSAZ) designated use. The DWS designated use applies to a surface water that is used as a raw water source for drinking water supply. Grant Creek, Pinery Creek, and Mormon Lake have all traditionally been protected for this use in Article 1.

A.R.S. § 49-221(G)(3)(a) specifically contemplates protecting non-WOTUS surface waters "that are public waters used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water." A.R.S. § 49-221(G)(3)(b) specifically protects "perennial waters or intermittent waters of the state that are used as a drinking water source, including ditches and canals." A.R.S. § 49-221(G)(3)(d) specifically protects "perennial or intermittent public waters used for recreational or commercial fish consumption" and A.R.S. § 49-221(G)(3)(e) specifically protects "perennial or intermittent public waters used for water-based recreation such as swimming, wading, boating and other types of recreation in and around the water. The adoption of the DWSAZ, FBCAZ, PBCAZ, FCAZ, A&WcAZ, and A&WwAZ ensure that the specific goals of the statute are met.

Finally, ADEQ recognizes the use and value of surface waters for agricultural purposes by establishing the agricultural irrigation (AgIAZ) and agricultural livestock watering (AgLAZ) designated uses. These uses are intended to maintain and protect surface water quality so water can be used for crop irrigation or to water cattle and other livestock.

SWPP Interim, Presumptive Designated Uses – R18-11-204

ADEQ has endeavored to build a set of regulations that could be used if the definition of WOTUS changes again in the near future. In our federal program, the tributary rule is used to assign standards to surface waters that are discovered to be WOTUS but haven't had designated uses assigned in Appendix B. One of the major limitations towards establishing a lever like the tributary rule is that the SWPP enabling legislation explicitly states that for a water to be protected, it must be listed on the PSWL.

The only time this is not the case is when the director discovers an imminent or substantial threat to public health or the environment that may occur if a surface water isn't listed. In the unlikely event that this happens, ADEQ is proposing the interim, presumptive designated uses rule in Article 2. The intention of this rule is that if the Director discovers an imminent or substantial threat to public health or the environment may occur, then the Director could list a water on the PSWL through the process prescribed in statute and use this rule to assign the proper designated uses outlined in this rule.

SWPP Analytical Methods – R18-11-205

ADEQ has adopted a similar rule to our federal program to ensure that our sampling methodology remains consistent across both state and federal waters. The analytical methods rule ensures that samples collected by ADEQ are analyzed by qualified individuals at qualified locations that have the equipment necessary to produce scientifically verifiable results. This rule ensures that decisions made on non-WOTUS protected surface waters are made with the same level of scientific accuracy and credibility as decisions in the Federal program.

SWPP Mixing Zones – R18-11-206

Occasionally, due to design and economic constraints, permit holders for discharges to non-WOTUS protected surface waters may need to discharge certain pollutants at concentrations that exceed SWQS. ADEQ has added mixing zone provisions to the SWPP to allow dischargers greater flexibility in permitting conditions while still protecting the environment.

A mixing zone is a limited area or volume of water where dilution of a discharge takes place and where numeric water quality criteria may be exceeded in a receiving surface water. The boundary of a mixing zone is the point where the discharged pollutant is completely mixed. The goal of a mixing zone is to ensure that pollutant discharges are mixed so as to prevent acute toxicity and lethality to organisms passing through the mixing zone, and to protect the biological, chemical, and physical integrity of a surface water as a whole.

To ensure the prevention of acute toxicity, the requester of a mixing zone will generally propose a mixing zone boundary based on the following steps:

1. Identify the critical flow conditions of the receiving water and discharge, in order to predict the worst-case mixing scenario of the pollutants in the mixing zone.
2. Identify conservative pollutant concentration inputs.
3. Model the mixing of the discharged pollutants based on the critical flow conditions and concentration assumptions.
4. The model run will produce an acceptable mixing zone size. The model will account for whether a mixing zone should or should not be allowed.

Modeling for mixing zone size may be performed, as appropriate, by simple calculation. Ultimately, the factors in determining whether acute toxicity is prevented are (1) duration of exposure, and (2) pollutant concentration. While it is a goal to ensure that mixing zones are not larger than necessary, the size of the mixing zone is not as important as toxicity. The mixing zone standards and requirements in this rulemaking ensure protection of all water quality standards and also are flexible enough for practicable and scientifically defensible implementation.

This rulemaking includes a definition of critical flow conditions. Mixing zone size and boundaries are based on calculations and modeling to account for critical flow conditions. Assigning critical flow conditions for discharge and receiving water flows will allow for sizing of mixing zones based on exposure risk and exceedance frequencies and the particular designated use and criteria.

SWPP Natural Background – R18-11-207

ADEQ has implemented a natural background rule in the SWPP rulemaking. The natural background rule allows ADEQ to consider whether the concentration of the pollutant is caused solely by natural background if a violation of water quality standards occurs.

SWPP Schedules of Compliance – R18-11-208

R18-11-208 allows ADEQ to work with permittees to develop an enforceable schedule in order to allow them time to come back into compliance with their AZPDES permit.

SWPP Variances – R18-11-209

A water quality variance is a time limited exception to an existing water quality criterion. A temporary water quality criterion for a designated use is identified which maintains the highest attainable condition of that water. The highest attainable condition of the water essentially means that the receiving water quality aligns as much as possible with a designated use and is the best water quality that can be achieved during the term of a variance.

A variance is time-limited, discharger or water body-specific, and pollutant-specific. A variance does not result in any change to the underlying designated use and criteria of the receiving water. This means that any discharger to which a variance does not apply must still comply with the applicable designated use and criteria of the water.

Variances are a vital tool to improving water quality in partnership with facilities and ADEQ has had some form of a rule allowing for variances in the federal program since 1996. The variance rule aligns with the federal version of the rule and EPA guidance as no EPA rule previously existed to prescribe and define variance requirements.

Under the rule, variances are tied to a specific discharger/facility or water body segment. For example, if a discharger is granted a variance, the variance will be adopted as a rule, and that rule will be referred to as a basis for a permit condition in that discharger's permit in the next permit renewal or modification. Note that if a variance is repealed, which may occur for some reason that necessitates immediate action, ADEQ would have the authority under the standard reopener clause to modify the permit condition.

ADEQ had adopted the requirements that a variance must protect the "highest attainable condition" of the water body to which a variance applies. “Highest attainable condition” will be defined in a similar way as it is with the federal program, specifically that:

1. The condition does not have to be expressed as a use, but rather as a quantifiable expression of the condition;
2. The condition cannot lower currently attaining water quality in that the condition does not change the designated use underlying a variance.

Thus, the highest attainable use is a modified aquatic life, wildlife, or recreational use, while the highest attainable condition is an expression of pollutant reduction. Because the “highest attainable condition” must be met at any time throughout a variance term, variance requirements may need to be expressed as a range, and dependent on particular parameters, to account for change over time, or multiple variances may be adopted to allow for incremental change in water quality. The rule allows variances to be issued for longer than five years, but for no longer than is necessary to achieve the highest attainable condition.

SWPP Site-specific Standards – R18-11-210

ADEQ is proposing to adopt a rule that is similar to the federal version of this rule in order to allow the agency to set site-specific standards for listed waters.

Enforcement of Non-Permitted Discharges for Non-WOTUS Waters – R18-11-211

The rule prescribes the minimum data collection requirements for identifying a violation of a standard for enforcement purposes. To be clear, this rule does not apply to exceedances of a permit. ADEQ has included the language that a “non-permitted discharge violation” does not include a discharge regulated under an AZPDES permit. Therefore, this enforcement rule will not be applied in situations where there is a permitted discharge.

What this rule does provide is a mechanism to determine the need for enforcement of suspected unpermitted discharges to non-WOTUS protected surface waters and ensuing violations of water quality standards. ADEQ believes the language in the rule clarifies that it only applies to non-permitted discharge violations.

Although the rule does prescribe the minimum data collection requirements, these requirements are for enforcement purposes only in the situation where a discharge is not permitted. However, because this rule is located in the standards rules, it may be unclear that this rule is not intended to be used for “assessment” purposes. An ”assessment” is a required action whereby, every 5 years, ADEQ assesses whether each water or segment of a non-WOTUS protected surface water is meeting the water quality standards that have been set for it.

For assessment and impaired water identification purposes, ADEQ wishes to clarify that the agency must use the relevant standard rule and associated calculation method pursuant to A.A.C. Chapter 11, Article 2 for each pollutant/use, and use the credible data and data interpretation requirements and methodologies in the Impaired Waters Identification rules in A.A.C. Chapter 11, Article 6 to determine whether each water is attaining applicable standards or not. The impaired water identification rules in that article currently apply to non-WOTUS protected surface waters, although ADEQ has a duty to modify those rules within a year of publishing this rulemaking.

SWPP Statements of Intent – R18-11-212

Because the SWPP enabling legislation contains a significant number of limitations regarding the reach of ADEQ’s potential regulations, ADEQ has included a rule to specifically suggest the intent of the agency during rulemaking.

SWPP Narrative Standards – R18-11-214

Narrative criteria are general statements designed to protect the aesthetics and health of a waterway. ADEQ is proposing to adopt a majority of the existing narrative criteria to prevent the discharge of pollutants that cause any conditions listed in R18-11-214.

Water quality criteria, numeric criteria, and narrative criteria are all based on a significant body of scientific work. Generally, standards are developed using a workgroup process or informal public meetings and are eventually proposed for public comment. This rule does not include narrative-numeric criteria for bottom deposits, biocriteria, or nutrient standards for lakes. The rules in R18-11-108.03 have not been approved by the EPA, so their inclusion was not part of the ESE analysis that ADEQ performed. There are no waters on this first draft of the PSWL that are perennial, wadable streams so standards that are similar to R18-11-108.01 and R18-

11-108.02 would not apply to any listed waters.

SWPP Numeric Standards – R18-11-215

R18-11-215 lists the numeric water quality standards applicable to non-WOTUS protected surface waters. The numeric water quality criteria have been adopted at the same level as those in our federal program.

When calculating water quality standards for human health, the State uses base equation factors found in EPA human health criteria methodology documentation, and then modifies the formulas to reflect the different uses assigned to Arizona waters.

Arizona's human health standards are broken down into domestic water source AZ (DWS AZ), fish consumption AZ (FC AZ), full body contact AZ (FBC AZ) and partial body contact AZ (PBC AZ). The first three standards (DWSAZ, FCAZ, FBCAZ) are further divided and calculated using carcinogenic and non-carcinogenic endpoints. Where the FBCAZ use assumes acute exposure to carcinogens through water consumption, the PBCAZ standard, due to the infrequent, short, and episodic nature of the exposure, assumes an acute dose and uses only the non-carcinogenic endpoint.

Aquatic and wildlife standards are derived using empirical toxicity data for Arizona species to calculate acute and chronic endpoints. For human health standards, data are mainly extrapolated from animal studies. Because of this, the reference dose (RfD) used to calculate a standard incorporates safety factors addressing aspects such as extrapolation of animal data and human weight, age, and sex differences. Also, because humans don't have constant and direct exposure to waterborne toxins, for non-carcinogenic pollutants, ADEQ uses relative source contribution factors (RSC) to account for exposures from other sources, such as food and occupational exposures. For fish consumption, ADEQ also considers the average bioaccumulation potential of a chemical in edible tissues of aquatic organisms that are commonly consumed by humans.

Carcinogenic standards are functionally statistical risk equations that take the potency of a carcinogen and calculate the concentration that would cause one additional cancer case per 1,000,000 people. One in a million is considered an "acceptable" risk when calculating standards. Every exposure carries exactly the same risk for developing cancer.

Unlike aquatic and wildlife standards, human health standards are not broken down into chronic and acute concentrations. A more conservative approach is employed, which assumes acute lifetime exposure due to: a) the unknowns due to lack of empirical data, b) other uncontrolled exposures to toxins, c) the statistical nature of carcinogenic standards and d) the fact that standards are set for the human population as a whole.

For all of the aquatic and wildlife uses (A&W AZ) the State uses data contained in the US EPA CWA § 304(a) Aquatic Life Table for the individual pollutant in question. To tailor the standard to one of the four A&W uses, the State uses the EPA "Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria" (EPA, 2013). In this procedure, species that do not occur in a particular waterbody type (e.g. salmonids for the A&W Warmwater use) are deleted from the data set to better reflect the taxonomy of species that occur in that waterbody type and their respective toxicity values in the criteria derivation process. ADEQ utilizes a state-specific species list to tailor the aquatic and wildlife uses as much as possible to calculate A&W standards for Arizona.

For standards for the Aquatic and Wildlife Coldwater use, ADEQ uses salmonids and other cold water species. For Aquatic and Wildlife Warmwater, coldwater species like salmonids are usually not considered. For Aquatic and Wildlife Effluent Dependent, ADEQ uses warm water species that generally occur in nutrient rich, lower oxygen environments.

The Protected Surface Waters List – R18-11-216

One of the main features of the new Arizona SWPP is that it requires the Director of ADEQ to maintain and publish a Protected Surface Waters List (PSWL). The Final PSWL is the version of the list that will be codified in this rulemaking at R18-11-216. Pursuant to the requirements of HB2691, the PSWL does include:

1. Waters of the United States;
2. The Bill Williams River, from its confluence of the Big Sandy River and the Santa Maria River to its confluence with the Colorado River;
3. The Colorado River, from the Arizona-Utah border to the Arizona-Mexico border;
4. The Gila River, from the Arizona-New Mexico border to its confluence with the Colorado River;
5. The Little Colorado River, from the confluence of the East and West Forks of the Little Colorado River to its confluence with the Colorado River;

6. The Salt River, from the confluence of the Black River and White River to its confluence with the Gila River;
7. The San Pedro River, from the Arizona-Mexico Border to the confluence with the Gila River;
8. The Santa Cruz River, from its origins in the Canelo Hills of Southeastern Arizona to its confluence with the Gila River; and
9. The Verde River, from Sullivan Lake to its confluence with the Salt River.

The PSWL does not include non-WOTUS waters that are:

1. Canals in the Yuma project and ditches, canals, pipes, impoundments and other facilities that are operated by districts organized under Arizona Revised Statutes (A.R.S.) Title 48, Chapters 18, 19, 20, 21 and 22 and that are not used to directly deliver water for human consumption, except when added pursuant to A.R.S. § 49-221(G)(4) and in response to a written request from the owner and operator of the ditch or canal until the owner and operator withdraws its request.
2. Irrigated areas, including fields flooded for agricultural production.
3. Ornamental and urban ponds and lakes such as those owned by homeowners' associations and golf courses, except when added pursuant to an economic, environmental, and social cost-benefit analysis where the benefits of listing the water outweigh the costs and in response to a written request from the owner of the ornamental or urban pond or lake until the owner withdraws its request.
4. Swimming pools and other bodies of water that are regulated pursuant to A.R.S. § 49-104, subsection (B).
5. Livestock and wildlife water tanks and aquaculture tanks that are not constructed within a protected surface water.
6. Stormwater control features.
7. Groundwater recharge, water reuse and wastewater recycling structures, including underground storage facilities and groundwater savings facilities permitted under A.R.S. Title 45, Chapter 3.1 and detention and infiltration basins, except when added pursuant to A.R.S. §49-221(G)(4) and in response to a written request from the owner of the groundwater recharge, water reuse or wastewater recycling structure until the owner withdraws its request.
8. Water-filled depressions created as part of mining or construction activities or pits excavated to obtain fill, sand or gravel.

9. All water treatment systems components, including constructed wetlands, lagoons and treatment ponds, such as settling or cooling ponds, designed to either convey or retain, concentrate, settle, reduce or remove pollutants, either actively or passively, from wastewater before discharge to eliminate discharge.
10. Groundwater.
11. Ephemeral waters
12. Lakes and ponds owned and managed by the United States Department of Defense and other surface waters located on and that do not leave United States Department of Defense property, except when added pursuant to paragraph 4 of this subsection and in response to a written request from the United States Department of Defense until it withdraws its request.

The PSWL also includes non-WOTUS surface waters that fall into the following categories:

1. All lakes, ponds, and reservoirs that are public waters used as a drinking water source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water;
2. Perennial waters or intermittent waters of the state that are used as a drinking water source, including ditches and canals;
3. Perennial or intermittent tributaries to the Bill Williams River, the Colorado River, the Gila River, the Little Colorado River, the Salt River, the San Pedro River, the Santa Cruz River and the Verde River;
4. Perennial or intermittent public waters used for recreational or commercial fish consumption;
5. Perennial or intermittent public waters used for water-based recreation such as swimming, wading, boating and other types of creation in and on the water;
6. Perennial or intermittent wetlands adjacent to waters on the protected surface waters list; and
7. Perennial or intermittent waters of the state that cross into another state, the Republic of Mexico or the reservation of a federally recognized tribe.

<u>Non-WOTUS Waters – Table A</u>

This rulemaking adds the following non-WOTUS waters to the PSWL. The table below also includes a rationale for listing the water.

Surface Waters	Segment Description and Location (Latitude	Comments

	and Longitudes are in NAD 83)	
Cottonwood Creek	Headwaters to confluence with unnamed tributary at 35°20'46"/113°35'31"	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Cottonwood Creek	Below confluence with unnamed tributary to confluence with Truxton Wash	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Wright Canyon Creek	Headwaters to confluence with unnamed tributary at 35°20'48"/113°30'40"	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Wright Canyon Creek	Below confluence with unnamed tributary to confluence with Truxton Wash	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Boot Lake	34°58'54"/111°20'11"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Little Ortega Lake	34°22'47"/109°40'06"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Mormon Lake	34°56'38"/111°27'25"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Potato Lake	35°03'15"/111°24'13"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Pratt Lake	34°01'32"/109°04'18"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.

Sponseller Lake	34°14'09"/109°50'45"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Vail Lake	35°05'23"/111°30'46"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Water Canyon Reservoir	34°03'38"/109°26'20	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Bonsall Park Lake	59th Avenue & Bethany Home Road at 33°31'24"/112°11'08"	Ornamental or urban ponds and lakes such as those owned by homeowners' associations and golf courses, added pursuant to an economic, environmental, and social cost-benefit analysis where the benefits of listing the water outweigh the costs and in response to a written request from the owner of the ornamental or urban pond or lake until the owner withdraws its request. ADEQ has received a request from the relevant municipality and determined that protecting this hydrologically isolated lake with the water quality standards in this article produces more benefits than costs.
Canal Park Lake	College Avenue & Curry Road, Tempe at 33°26'54"/ 111°56'19"	Ornamental or urban ponds and lakes such as those owned by homeowners' associations and golf courses, added pursuant to an economic, environmental, and social cost-benefit analysis where the benefits of listing the water outweigh the costs and in response to a written request from the owner of the ornamental or urban pond or lake until the owner withdraws its request. ADEQ has received a request from the relevant municipality and determined that protecting this hydrologically isolated lake with the water quality standards in this article produces more benefits than costs.
Big Creek	Headwaters to confluence with Pitchfork Canyon Wash	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS that are similar to those in the federal program pursuant to ADEQ's ESE analysis.
Goudy Canyon Wash	Headwaters to confluence with Grant Creek	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Grant Creek	Headwaters to confluence with unnamed tributary at 32°38'10"/109°56'37"	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.

Grant Creek	Below confluence with unnamed tributary to terminus near Willcox Playa	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
High Creek	Headwaters to confluence with unnamed tributary at 32°33'08"/110°14'42"	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
High Creek	Below confluence with unnamed tributary to terminus near Willcox Playa	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Pinery Creek	Headwaters to State Highway 181	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Pinery Creek	Below State Highway 181 to terminus near Willcox Playa	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Post Creek	Headwaters to confluence with Grant Creek	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Riggs Flat Lake	32°42'28"/109°57'53"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS that are similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Rock Creek	Headwaters to confluence with Turkey Creek	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Soldier Creek	Headwaters to confluence with Post Creek at 32°40'50"/109°54'41"	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Snow Flat Lake	32°39'10"/109°51'54"	Lake, pond, or reservoir that is a public water used as a drinking source, for recreational or commercial fish consumption or for water-based recreation such as swimming, wading and boating and other types of recreation in and on the water. Protected by WQS similar to those adopted in the federal program pursuant to ADEQ's ESE analysis.
Stronghold Canyon	Headwaters to 31°55'9.28"/109°57'53.24	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected

East	"	by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis. ADEQ has assigned designated uses of A&WcAZ, PBCAZ, and AgLAZ to this water in this rulemaking pursuant to the ESE analysis. Stronghold Canyon East was split into two reaches because the original reach is 3.76 miles in length with 1.44 miles above 5000' and 2.32 miles below 5000'.
Stronghold Canyon East	31°55'9.28"/109°57'53.24" to confluence with Carlink Canyon	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis. ADEQ has assigned designated uses of A&WcAZ, PBCAZ, and AgLAZ to this water in this rulemaking pursuant to the ESE analysis. Stronghold Canyon East was split into two reaches because the original reach is 3.76 miles in length with 1.44 miles above 5000' and 2.32 miles below 5000'.
Turkey Creek	Headwaters to confluence with Rock Creek	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Turkey Creek	Below confluence with Rock Creek to terminus near Willcox Playa	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Ward Canyon Creek	Headwaters to confluence with Turkey Creek	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.
Moonshine Creek	Headwaters to confluence with Post Creek	Perennial or intermittent public water used for recreational or commercial fish consumption or water-based recreation such as swimming, wading and boating, and other types of recreation in and on the water. Protected by WQS similar to those in the federal program pursuant to ADEQ's ESE analysis.

WOTUS-Protected Surface Waters – Table B

This rulemaking includes a list of WOTUS protected surface waters to provide consistency and clarity to stakeholders about how surface waters in Arizona are regulated. The waters listed in Table B have been regulated by ADEQ as WOTUS, under the law that is effective on 11/18/2022. Notwithstanding its inclusion in Table B, the status of a particular water identified as WOTUS can be contested by a person subject to an enforcement or permit proceeding related to that water.

Historically Regulated as WOTUS and Pending Confirmation – Table C

ADEQ has included Table C in this rulemaking as a table of waters that are regulated as WOTUS but do not have a formal WOTUS determination. ADEQ will continue gathering data on these waters to determine whether they should continue to be regulated under the Federal program or if they should more appropriately be protected by the SWPP. Notwithstanding its inclusion in Table C, the status of a particular water identified as WOTUS can be contested by a person subject to an enforcement or permit proceeding related to that water.

ADEQ has included Table C as a separate designation in this rulemaking to provide clarity to stakeholders on the status of a water during the SWPP rulemaking process. The waters on this list need additional analysis to determine whether they should continue to be considered a WOTUS. This list includes waters that are also listed on Appendix B, waters that have been assessed as impaired during ADEQ bi-yearly water quality assessment, and waters that are protected by active AZPDES permits. The inclusion of a surface water in Table C of the PSWL does not change the jurisdictional status of a surface water for purposes of the CWA.

SWPP Best Management Practices – R18-11-217

ADEQ engaged WestLand Engineering & Environmental Associates (WestLand) to identify best management practices (BMPs) that would conform with the requirement in A.R.S. § 49-255.05. Specifically, the statute requires the identification of appropriate BMPs to be used when working within the ordinary high-water mark (OHWM) of intermittent or perennial non-WOTUS protected surface waters, or within the bed and bank of surface waters that materially impact state protected surface waters.

WestLand produced two reports that describe a list of BMPs to meet the following requirements:

1. Rules establishing BMPs for various activities enumerated in §49-255.05.
2. Notification requirements to ensure that activities enumerated in §49-255.05 do not violate applicable surface water quality standards.

The Construction General Permit (CGP) (see, e.g., Parts 1.5(3), 1.5(4), 2.3(3)(c), 3.8(2), and 7.0) uses a ¼ mile upstream distance to identify situations where activities near sensitive waters (impaired waters or outstanding Arizona waters) require additional review or discharge monitoring. ADEQ has determined that it is protective, including from both a distance and topography perspective (see A.R.S. § 49-255.05(A)(2)), to use a similar ¼ mile upstream threshold to determine material impact for purposes of determining applicability of these BMPs.

7. A reference to any study relevant to the rule that the agency reviewed and proposes either to rely on or

not to rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

Arizona Administrative Register

Summary: The Administrative Register (Register) is a legal publication published by the Administrative Rules Division that contains information about rulemaking activity in the state of Arizona. The issues referenced below include code sections being amended and introduced to Chapter 11, which involves the Department of Environmental Quality Water Quality Standards.

Study Resource: These publications mainly refer to and make reference to topics that contribute to the Economic, Small Business, and Consumer Impact Statements. The studies referred to and referenced in this publication provide a brief summary of tourism, agriculture, or other benefits as well as cost categories or data produced from the findings. The following items are addressed in individual registers cited below:
Arizona Administrative Register (1995). Notice of Proposed Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards, Volume 1, Issue 50.
Publication Study Resource: Proposed new section to the modification of water quality standards on the grounds of net ecological benefit based on the following criteria:

1. The discharge of effluent creates or supports an ecologically valuable aquatic; wetland, or riparian habitat in an area where such resources are limited
2. The cost of treatment to comply with a water quality standard is so high that it is more cost effective to eliminate the discharge of effluent rather than upgrade treatment
3. It is feasible for a point source discharger to completely eliminate the discharge of effluent
4. The environmental benefits associated with the discharge of effluent under a modified water quality standard exceed the environmental costs associated with elimination of the discharge and destruction of the effluent dependent ecosystem
5. All practicable point source control discharge programs, including local pretreatment, waste minimization, and source reduction programs are implemented
6. The discharge of effluent under a modified water quality standard will not cause or contribute to a violation of a water quality standard that has been established for a downstream surface water

7. The discharge of effluent will not produce or contribute to the concentration of a pollutant in the tissues of aquatic organisms or wildlife that is likely to be harmful to humans or wildlife through food chain concentration.

Arizona Administrative Register (1996). Notice of Final Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards For Surface Waters – Economic Small Business and Consumer Impact Statement, Volume 2, Issue 20.

Publication Study Resource: The adopted Net Ecological Benefit rule provides a benefit to the owners of wastewater treatment plants that support or create effluent dependent waters because it provides a mechanism for relief from a water quality standard that otherwise might force costly treatment plant upgrades. The adopted rule also provides ecosystem benefits in that it provides a regulatory incentive to maintain and preserve in-stream flows in areas where riparian and aquatic resources are limited. The continued discharge of effluent may provide net ecological benefits, even though an applicable water quality standard is not being met. Examples of possible ecological benefits include:

1. Enhancement, expansion or restoration of aquatic and riparian habitat for native, threatened or endangered aquatic species, or for migratory waterfowl
2. Provision or enhancement of habitat or food sources for native, threatened and endangered species that are terrestrial
3. Enhancement of species diversity
4. Enhancement or restoration of riparian values (e.g. cottonwood/willow habitat, improved bird and wildlife habitat)

Arizona Administrative Register (2001). Notice of Proposed Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards, Volume 7, Issue 11.
Publication Study Resource: Proposed decision criteria for *Social and economic impact of Tier 3 antidegradation protection:* The Director may take into consideration the potential social and economic impact of a unique water classification and the establishment of Tier 3 antidegradation protection, including:

1. Impact of a prohibition of new point source discharges and expansion of existing point source discharges, including possible limits on discharges to the tributaries of a proposed unique water and possible impacts on growth and development.
2. Impact of possible future restrictions on land use activities in a unique water's watershed, including cattle grazing, timber harvesting, mining, recreation, and agriculture.
3. The impact of stricter requirements for §401 certification of federal permits and licenses, including NPDES and §404 permits.
4. Impact on private property rights and the potential for regulatory "takings."
5. Ecosystem and preservation values.

Arizona Administrative Register (2002). Notice of Final Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards, Volume 8, Issue 13.

Arizona Administrative Register (2008). Notice of Final Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards, Volume 14, Issue 52.

Arizona Administrative Register (2016). Agency Certificate Notice of Final Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards, Volume 22, Issue 36.

Publication Study Resource: ADEQ proposed to eliminate the requirement that a discharger have a plan to eliminate the discharge under active consideration as part of what must be demonstrated. Communities and developers should benefit by eliminating an extra burden in seeking to use high quality effluent to create aquatic and riparian ecosystems.

Arizona Administrative Register (2017). Notice of Final Rulemaking, Title 18, Environmental Quality, Chapter 11, Department of Environmental Quality, Water Quality Standards, Volume 23, Issue 6.

Publication Study Resource: Estimated costs and benefits to consumers and the public mentioned in recreation activities (e.g., Ironman at Tempe Town Lake), fishing activities, and agricultural productivity.

Arizona Administrative Register (2019). Notice of Final Rulemaking, Title 18, Environmental Quality, Chapter

11, Department of Environmental Quality, Water Quality Standards, Volume 25, Issue 5.

Publication Study Resource: See notes regarding interface with AOT studies under *Agriculture in Arizona's Economy* and *The Economic Contributions of Water-related Outdoor Recreation in Arizona*, below.

Agriculture in Arizona's Economy

Summary: This report explores agriculture's contribution to the Arizona economy by examining the entire agribusiness system in Arizona.

Study Resource: The economic contribution analysis was conducted using input-output modeling and the premiere software for this type of analysis, IMPLAN Version 3.1. IMPLAN is a modeling system of a regional economy that is based on national averages of production conditions. This model was refined based on the best available data to more accurately reflect production conditions in Arizona.

Applicability to current benefit/cost estimating procedures: Uses IMPLAN system to translate *direct* economic effects of some action into *secondary* effects, reflecting the multiplier effects of actions through the economic system. The practice represented by this modeling tool, widely used in economic impact assessments, would be a logical eventual extension of cost and benefit estimating for Arizona water bodies.

Kerna, A., & Frisvold, G. (2014). Agriculture in Arizona's Economy: An Economic Contribution Analysis. *Department of Agricultural & Resource Economics. University of Arizona*.

Buehman Canyon Creek – Economic Benefits of Unique Water Designation Study of Buehman Canyon Creek

Summary: This study reviews the economic benefits of Buehman Canyon Creek for the consideration of determining the water body as a unique water designation.

Study Resource: Provides guidance on factors that need to be considered in a comprehensive examination of costs and benefits in the economic impact statement for proposed unique water designation.

Applicability to current benefit/cost estimating procedures: This study mentions economic benefits that are quantifiable but does not include the data methodology used to support the economic benefits associated with the proposed unique water designation for Buehman Canyon Creek.

Colby, B.G. (1996) Buehman Canyon Creek – Economic Benefits of Unique Water Designation Study – March 1996. *Arizona Department of Environmental Quality*.

The Economic Benefits of Recreation in Rural Arizona

Summary: This report provides a summary analysis of tourism and recreation as factors influencing the state's economy and local economy's within the state.

Study Resource: This report summarizes park recreation tourism economic benefits, the benefits to rural areas, and the need to develop more facilities to access recreation lands. Drawing from the published survey of visitors of Arizona State Parks conducted between 1987-1988, visitors were asked how much money their group spent during their trip within 50 miles of the state park they were visiting, average expenditures were produced per visitor group per trip and were applied to park attendance counts to document total expenditures spent within 50 miles of state parks by visitors in 1987.

Applicability to current benefit/cost estimating procedures: The reference cited for this document, entitled "*The 1987-1988 Use Study of Arizona State Parks Visitors,*" for the Arizona State Parks Board in 1989, provides some quantified data for visitor expenditures that lends itself to capturing economic benefits of this type.

Spear, S. (1989) Rural Arizona… The Economic Benefits of Recreation, A Summary Analysis of Tourism and Recreation as Factors Influencing State and Local Economies. *Arizona State Parks Board Statewide Planning Section.*

The Economic Contributions of Water-related Outdoor Recreation in Arizona

Summary: A study of outdoor recreational activity on or along the water to estimate the level of participation in the state and the contributions from these activities to the county and state economies.

Study Resource: The analysis is structured around estimating three sets of metrics: participation, spending, and economic contributions. Participation estimates for this study relied largely on two data sources to characterize outdoor recreation on or along the water. Economic Contributions were estimated by combining spending estimates with data that models economic sector interactions in a given geography. Expenditure data were collected for different categories (e.g., groceries, fuel, equipment, etc.) as part of the OIA survey, which enabled allocation of spending to specific economic sectors. These data were then run through an IMPLAN™ model of the Arizona statewide economy using software produced by MIG, Inc. The resulting county-level and water-specific estimates reflect the contribution that outdoor recreation in those locales has on the statewide economy. Appendix A in the document provides additional background information on economic contributions.

Applicability to current benefit/cost estimating procedures: See notes on IMPLAN under *Agriculture in Arizona's Economy*. The Arizona Office of Tourism (AOT) sponsors periodic generalized studies related to Arizona visitors, including types of activities, expenditures, economic impacts, etc. To the extent that benefit/cost modeling of water bodies/designations is expanded into specific consideration of benefits related to riparian-focused activities, these location/activity-specific studies (#4 as well as this one) can add to the specificity of benefits associated with activities of particular interest.

Southwick Associates (2019). The Economic Contributions of Water-related Outdoor Recreation in Arizona: A Technical Report on Study Scope, Methods, and Procedures. *Audubon Arizona*.

<u>Socioeconomic consequences of mercury use and pollution</u>

S*ummary:* In the past, human activities often resulted in mercury releases to the biosphere with little consideration of undesirable consequences for the health of humans and wildlife. This paper outlines the pathways through which humans and wildlife are exposed to mercury.

Study Resource: This paper examines the life cycle of mercury from a global perspective and then identifies several approaches to measuring the benefits of reducing mercury exposure, policy options for reducing Hg emissions, possible exposure reduction mechanisms, and issues associated with mercury risk assessment and communication for different populations. This study also briefly reviews the methods used to quantify the benefits to human health associated with reduced mercury exposure, which include Benefit-cost Analysis and the Cost-effectiveness Analysis.

Applicability to current benefit/cost estimating procedures: This paper does not include any quantifiable data used in its review of the Benefit-cost Analysis or Cost-effectiveness Analysis.

Swain, E. B., Jakus, P. M., Rice, G., Lupi, F., Maxson, P. A., Pacyna, J. M., ... & Veiga, M. M. (2007). Socioeconomic consequences of mercury use and pollution. *Ambio*, 45-61.

Nature-based Tourism and the Economy of Southeastern Arizona

Summary: This study documents expenditures in the Sierra Vista area by visitors to the San Pedro Riparian National Conservation Area (RNCA) and by bird watchers at Ramsey Canyon Preserve. Information on visitor expenditures, characteristics and preferences is reported, along with implications for nature-based tourism in southeastern Arizona. This study examined visitation to only two natural areas and so economic impacts reported here represent only a portion of the impacts of visitor spending associated with all nature preserves located in southeastern Arizona. The study indicates that 95% of visitors to Ramsey Canyon and the San Pedro RNCA go to at least one other site in southern Arizona on a typical visit to the area, and make expenditures in communities located near these sites.

Study Resource: The expenditure analysis indicates the importance of an overnight stay for communities to experience significant economic benefits from visitors.

Applicability to current benefit/cost estimating procedures: See notes regarding interface with AOT studies under *The Economic Contributions of Water-related Outdoor Recreation in Arizona*, above.

Crandall, K., Leones, J., & Colby, B. G. (1992). *Nature-based Tourism and the Economy of Southeastern Arizona: Economic Impacts of Visitation to Ramsey Canyon Preserve and the San Pedro Riparian National Conservation Area, Final Report*. Department of Agricultural and Resource Economics, the University of Arizona.

Notes on inclusion of source studies and data preparation for wetlands meta-data

Summary: This memorandum provides reasons for excluding specific wetland valuation studies from the meta-data that was used in the meta-analysis for estimating national benefits in the *Economic Analysis for the Proposed "Revised Definition of 'Waters of the United States'" Rule* (U.S. EPA and Army, 2021).
Study Resource: Provides an overview of valuation scenarios considered in literature and the assumptions made to fill in data gaps for each study used for wetlands meta-data.

Applicability to current benefit/cost estimating procedures: Provides a critical meta-analysis of literature and studies that support estimating national benefits in the *Economic Analysis for the Proposed "Revised Definition of 'Waters of the United States'" Rule* (U.S. EPA and Army, 2021).

ICF. 2021. Notes on inclusion of source studies and data preparation for wetlands meta-data. Memorandum to Todd Doley and Steve Whitlock. November 22, 2021.

Using Meta-Analysis for Large-Scale Ecosystem Service Valuation: Progress, Prospects, and Challenges

Summary: This article discusses prospects and challenges related to the use of meta-regression models (MRMs) for ecosystem service benefit transfer, with an emphasis on validity criteria and post-estimation procedures given sparse attention in the ecosystem services literature. Includes a meta-analysis of willingness to pay for water quality changes that support aquatic ecosystem services, and the application of the model to estimate water quality benefits under alternative riparian buffer restoration scenarios in New Hampshire's Great Bay Watershed. These illustrations highlight the advantages of MRM benefit transfers, together with the challenges and data needs encountered when quantifying ecosystem service values.

Study Resource: The illustrated case study discussed in this paper helps to demonstrate how evaluations of issues can help clarify the suitability of Meta-Regression Modeling (MRM) predictions for benefit transfers.
Applicability to current benefit/cost estimating procedures: This illustrates benefit transfers using scenarios of potential water quality, setting variables, geospatial and socioeconomic data for benefit transfer scenarios, the data methodology, indexing calibration, WTP estimate predictions per household, and the challenges for Large-Scale Ecosystem Service Valuations.

Johnston, R. J., & Bauer, D. M. (2020). Using meta-analysis for large-scale ecosystem service valuation: progress, prospects, and challenges. *Agricultural and Resource Economics Review*, *49*(1), 23-63

<u>Economic Analysis for the Proposed “Revised Definition of ‘Waters of the United States’” Rule</u>

Summary: This Economic Analysis (EA) assesses the potential impacts of the proposed changes to the definition of “waters of the United States” based on the potential effects to Clean Water Act (CWA) programs that rely on that definition.

Study Resource: Provides an overview of economic analysis under the primary and secondary baselines for the CWA. The paper discusses the multiple components of the secondary baseline assessment, and provides estimates of the benefits and costs associated with this assessment, by states and for the US.

Applicability to current benefit/cost estimating procedures: This report provides broad guidance for estimating costs and benefits, key components of which, including benefits based on WTP, and various cost categories, were incorporated into a recommended BCA modeling structure for ADEQ.

U.S. Environmental Protection Agency and Department of the Army. (2021). *Economic Analysis for the Proposed “Revised Definition of ‘Waters of the United States’” Rule*.
https://www.epa.gov/system/files/documents/2021-11/revised-definition-of-wotus_nprm_economic-analysis.pdf

Supplementary Material to the Economic Analysis for the Proposed “Revised Definition of ‘Waters of the United States’” Rule

Summary: This document includes the Compendium of State and Tribal Regulations for CWA programs by state that corresponds to the *Economic Analysis for the Proposed “Revision Definition of ‘Waters of the United States’” Rule* report cited above.
Study Resource: See *Economic Analysis for the Proposed “Revision Definition of ‘Waters of the United States’” Rule* report cited above.

Applicability to current benefit/cost estimating procedures: Adds additional context to the approach EPA used in preparing estimates of costs and benefits, as addressed in *Revised Definition of ‘Waters of the United States Rule*.

U.S. Environmental Protection Agency and Department of the Army. (2021). *Supplementary Material to the*

Economic Analysis for the Proposed "Revised Definition of 'Waters of the United States'" Rule. https://www.epa.gov/system/files/documents/2022-01/epa-hq-ow-2021-0602-0087_content.pdf

Upgrading Wetland Valuation via Benefit Transfer

Summary: This study uses updated meta-data on wetland valuation to illustrate how a state-of-the-art meta-regression framework that is consistent with economic theory can be adapted to generate benefit transfer predictions for incremental changes in wetland acreage over space and time. This study also applies this framework to estimate losses in benefits for realistic changes in wetland acreage for some sub-watersheds, as can be expected under the proposed re-definition of the "Waters of the United States" to be protected under the Clean Water Act (CWA).

Study Resource: This study provides an illustration of how recent advances in meta-analytic methods could be applied to value changes in wetland acreage regionally or nationally.

Applicability to current benefit/cost estimating procedures: This study compiles an updated meta-data set on willingness to pay (WTP) to preserve or restore wetlands in the United States, drawing from 17 primary valuation studies as current as 2016. This study also takes advantage of recent advances in meta-regression modeling and computation of predicted benefits via the econometric framework proposed in the previous Moeltner 2019 study within the context of valuing surface water quality changes via Benefit Transfers (BT).

Moeltner, K., Balukas, J. A., Besedin, E., & Holland, B. (2019). Waters of the United States: Upgrading wetland valuation via benefit transfer. *Ecological Economics*, *164*, 106336.
All of the above studies are available at: http://azdeq.gov/node/8173.

8. A showing of good cause why the rulemaking is necessary to promote a statewide interest if the rulemaking will diminish a previous grant of authority of a political subdivision of this state:
Not applicable.

9. A summary of the economic, small business, and consumer impact:

A. An identification of this rulemaking:

The rulemaking addressed by this Economic, Small Business, and Consumer Impact Statement (EIS) contains amendments made by ADEQ to 18 A.A.C. 11, Article 1, in order to adopt and revise Surface Water Quality Standards (WQS) within the State of Arizona. Additionally, this EIS addresses the adoption of 18 A.A.C 11, Article 2, which adopts WQS for non-WOTUS protected surface waters listed on the Protected Surface Waters List. The WQS in Article 2 do not apply generally, and may only be applied to listed surface waters.

B. A brief summary of the EIS:

Interested stakeholders should review ADEQ's Social, Environmental, and Economic cost/benefit analysis technical paper at azdeq.gov/node/8173 for more in-depth information. ADEQ's contractors have drafted the paper to meet the statutory EIS requirements. Additionally, ADEQ has also addressed this topic earlier in the preamble and provided specific information regarding the costs and benefits of this proposed rule.
The three case-study waterbodies ADEQ has used to in this rulemaking provide a contrasting and otherwise informative set of examples by which to illustrate various aspects of the economic impact of this rule.

McClure's quantitative analysis based on the data available for various cost and benefit factors incorporates a framework for addressing additional, qualitative aspects of protecting Arizona waterbodies. These qualitative components add context to the quantified portion of ADEQ's analysis and reflect potential elements of the cost/benefit analysis that could be refined during formal rulemaking. Including these qualitative discussions also helps illustrate certain limitations in the current modeling process.

The quantitative elements synthesize the following types of information:

1. Key characteristics of the three case-study waterbodies for which the cost/benefit process will be performed and which influence the application of various cost and benefit factors.
2. Quantified cost and benefit factors to apply to the waterbodies and to the households in the two types of analysis areas.
3. Factors for updating cost and benefit estimates derived (by others) in preceding years and for discounting streams of costs and benefits estimated to occur over a subsequent 20-year period.
4. Cost and benefit totals for each waterbody, and the ratio of benefits to costs.

Qualitative aspects of the analysis are summarized in the contractor report through a series of tables that discuss the broad implications of additional benefit and cost categories not quantified in the current model, Environmental Justice observations based on the quantified demographic data, and the sensitivity of model results to various quantified variables, including how results compared to certain Arizona-specific cost and benefit estimates in the EPA document.

C. Identification of the person who will be directly affected by, bear the costs of, or directly benefit from the rules:

The table below summarizes the persons who will be directly affected by, bear the costs of, or directly benefit from the rules in a manner consistent with the requirements of the EIS statute. Although the analysis completed by the consultant is more complete, this section may serve as a more accessible summary.

This rulemaking could affect ADEQ, political subdivisions, public and private entities who wish to obtain an AZPDES permit for a discharge to a listed surface water, public and private entities who may need to operate under and AZPDES general permit, and public and private laboratories that test for permit compliance. It will also create health, social, and economic benefits to the general public from access to clean water and protection of fish and wildlife.

The AZPDES permitting program is implemented by ADEQ through various general and individual permits. Individual permit holders can include public and private WWTPs, publicly owned treatment works (POTW), fish hatcheries, power plants, mines, truck stops, drinking water plants, marinas, and Water Quality Assurance Revolving Fund (WQARF) remediation projects. Because the WQS adopted in Article 1 of this rulemaking are already in effect, and there are planned of current discharges to any waters listed in Article 2, ADEQ expects the costs of adopting this rulemaking to be extremely low. Nonetheless, based on the information above, ADEQ has identified the following list of potential affected parties:

State and local government agencies

ADEQ,

Agencies operating under individual or general AZPDES permits

Political subdivisions

Political subdivisions generally, public WWTPs, POTWs, public laboratories Non-WWTP government entities operating under AZPDES individual permits Non-WWTP government entities operating under AZPDES general permits

Privately-Owned Businesses

Private entities operating under general permits Private, non-WWTP individual permit holders

Private WWTPs

Private laboratories

The General Public

D. Cost/Benefit analysis:

Cost and Benefit Factors	Class 1 - sky island stream - Cochise Stonghold Cyn.	Class 2 - isolated lake - Pintail Lake & marshes	Class 3 - unique waterbody - Quitobaquito Pond
Size (acres or acre-equivalents (Class 1))	21.76	65.00	0.50
Forested?	Yes	Yes	No
Costs and benefits over a 20-yr. period, discounted			
Costs			
404 permits	$9,344	$9,344	$9,344
Mitigation			
ADEQ Admin	$62,641	$111,067	$74,938
Total	**$71,985**	**$120,411**	**$84,282**
Benefits, from willingness-to-pay (WTP) factors			
Local	$5,509,181	$7,840,675	$3,151
Non-local	$8,635,112	$54,780,036	$4,066
Total	**$14,144,293**	**$62,620,711**	**$7,216**
Arizona component	$14,982,646	$68,136,424	$8,045
Benefit/cost comparison			
Total benefits, Arizona	$14,982,646	$68,136,424	$8,045
Total costs	$71,985	$120,411	$84,282
Benefits/costs (first number in ratio: __ to 1)	208.1	565.9	0.10

The costs/benefits for each of these potentially affected parties is listed below. Use the following key to decipher the range of costs:

Minimal	Moderate	Substantial	Significant
$10,000 or less	$10,001 to $1,000,000	$1,000,001 or more	Cost/Burden cannot be calculated, but the Department expects it to be important to the analysis.

Description of Affected Groups	Description of Effect	Increased Cost/ Decreased Revenue	Decreased Cost/ Increased Revenue
ADEQ	Possible increase in number of surface waters identified as impaired and corresponding changes in 303(d) listings and TMDLs.	Minimal	
	Improved implementation and enforcement of the SWQS	Minimal	
	Administrative costs associated with future rulemakings	Significant	
	Predictability, reduced transaction costs, and responsiveness to stakeholders from avoiding federally-promulgated SWQS.		Minimal
	Compliance with state and federal law.		Minimal
	Support of ADEQ's mission to protect and enhance public health and the environment.		Substantial
Political subdivisions generally	Tax revenues and indirect benefits of clean water dependent industries (including outdoor recreation, tourism, etc.)		Cumulatively substantial
Public WWTP and/ or POTW	Increased monitoring costs	Minimal	
	Evaluation of compliance with standards	Minimal	
	Cost of compliance with new WQS	Minimal	

Public laboratories	Improved implementation and enforcement of water quality standards by political subdivisions with pretreatment programs. Clarification and correction of errors. Testing for WQS with accompanying costs.	Minimal	Moderate
Non-WWTP Government entities	Clarification and correction of errors. Cost of compliance with new WQS.	Minimal	Significant
Private entities operating under general permits	Clarification and correction of errors. Cost of compliance with new SWQS.	Minimal	Significant
Private WWTP	Clarification and correction of errors. Cost of compliance with new SWQS		Significant
Laboratories	Clarification and correction of errors. Testing for new SWQS with accompanying costs.	Minimal	Significant
General Public	Economic and social benefits of clean water		Cumulatively substantial
Non-WWTP individual permit holders (Power Plants, Mines, Marinas, etc.)	Clarification and correction of errors. Cost of compliance with new SWQS.	Minimal, if any	Significant

E. A general description of the probably impact on private and public employment in business agencies, and political subdivisions of this state directly affected by the rulemaking:

ADEQ estimates that this rulemaking will not have an impact on public or private employment. To the best of ADEQ's knowledge, the agency does not believe that any of the rule contained in this rulemaking package will result in a private or public entity needed an AZPDES permit.

F. A statement of the probably impact of the rules on small business:

The agency uses the term "small business" consistent with A.R.S. § 41-1001(21) which defines a “small business” as a concern, including its affiliates, which is independently owned and operated, which is not dominant in its field and which employs fewer than one hundred full-time employees or which had gross annual receipts of less than four million dollars in its last fiscal year.

1. An identification of the small business subject to the rules.

Among the stakeholders listed above, many could meet the A.R.S. § 41-1001(21) definition of small business. For example, a WWTP that would potentially discharge to a non-WOTUS protected surface water could be affected by this rule. In its current form, ADEQ cannot identify any small businesses that will be negatively affected by this rulemaking. Conversely, some small businesses may see some benefit in the clarification of WOTUS status of some waters and a clarification of what standards apply to those waters. Some recreational tourism related group may also see benefits from this rulemaking.

2. The administrative and other costs required for compliance with the rules:

Any potential compliance costs associated with this rulemaking would be based on the stakeholder involved. ADEQ's examination of those costs is addressed in the matrix above and the consultant's report.

3. A description of the methods that the agency may use to reduce the impact on small businesses, as required in A.R.S. § 41-1035.

In the event that a small business must acquire an AZPDES permit for a discharge to a non-WOTUS protected surface water, ADEQ has adopted water quality standards that allow ADEQ to establish variances, site-specific standards, or account for natural background pollutants when designing the permit.

4. The probable costs and benefits to private persons and consumers who are directly affected by the rules:

ADEQ's economic consultants prepared an executive summary which address the probable costs/benefits of and individual affected by these rules.

G. A statement of the probable effect on state revenues.

This rule should have a di minimus effect on state revenues.

H. A description of any less instructive or less costly alternative methods of achieving the purpose of this rulemaking:

ADEQ continually reviews and revises its WQS. These standards are adopted to protect public health or welfare and enhance the quality of water in the state. This means that WQS should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration the use and value of water for public water supplies, recreation in and on the water, and agricultural, industrial, and other purposes including navigation.

EPA will review ADEQ’s Article 1 WQS to determine if they are consistent with the requirements of the CWA. If EPA determines that ADEQ’s SWQS do not meet the requirements of the CWA, EPA will disapprove ADEQ’s SWQS and promulgate federal standards. ADEQ has, therefore, developed the proposed WQS to comply with federal and state law, and to avoid federally promulgated WQS. Additionally, water quality criteria must be based on sound scientific rationale to protect the designated use, and not economic considerations. ADEQ is not aware of any less intrusive or less costly alternative methods that would meet ADEQ’s legal obligations.

I. A description of any data on which the rule is based with a detailed explanation of how the data was obtained and why the data is acceptable data.

ADEQ recommends that interested stakeholder review ADEQ's Arizona Water Quality Standards technical paper for additional information about how data for calculating water quality standards is obtained. The paper can be accessed here: https://static.azdeq.gov/wqd/swpp/wqs_tp.pdf.

For information regarding ADEQ's economic analysis, ADEQ recommends that interested stakeholder review the consultant's final report and ADEQ's technical paper describing it. ADEQ's technical paper is available here: https://static.azdeq.gov/wqd/swpp/ese_tp.pdf and a copy of the consultant report is available here: https://static.azdeq.gov/wqd/swpp/ese_report.pdf.

10. A description of any changes between the proposed rulemaking, to include supplemental notices, and the final rulemaking:

Appendix A

- Non-substantive changes to correct CAS numbers and ensure values represented previously approved standards.
- Barium missing the distinction T after the PBC and FBC standards.
- Cadmium missing the (d) footnote.
- DDT and its breakdown products fixed to be "14 ug/L" for FBC and "0.0002 ug/L" for FC.
- Corrected 2,4,5 - TP PBC standard that was inadvertently crossed out.
- Corrected instances where (e) was transformed to € and (c) was transformed to © by word editing software.
- Removed CAS number for Tributyltin to avoid confusion and ensure applicability to all tributyltin species.

Appendix B

- EPA approved fish consumption use was missing from the Cherry Creek listing with the description "Headwaters to confluence with unnamed tributary at 34°05'09"/110°56'07"
- EPA approved Aquatic & Wildlife Coldwater use was missing from the Christopher Creek listing with the description "Headwaters to confluence with Tonto Creek."
- Modified description of Antelope Creek pursuant to EPA comment to reflect that the surface water segment runs from the Headwaters of Antelope Creek to the confluence with Martinez Creek.
- Modified descriptions of 3 Hassayampa River segments pursuant to EPA comment to more accurately identify the reaches.
- Modified the description of Weaver Creek pursuant to EPA comment to reflect that the surface water segment runs from the Headwaters to the confluence with Antelope Creek, tributary to Martinez Creek.
- Modified the description of the Santa Cruz EDW and Santa Cruz River pursuant to EPA comment to more accurate

describe the starting point and end point of the segment.

- Modified the description of Camp Creek pursuant to EPA comment to reflect that the segment runs to the Verde River.
- Modified the description of the Del Monte Gulch (EDW) pursuant to EPA comment to reflect that the segment runs to the Verde River.
- Modified the description of Sycamore Creek pursuant to EPA comment.

R18-11-201

- Definition for "Geometric Mean" was missing the associated formula.

R18-11-202

- Corrected R18-11-202(B)(2)(f) to read "Pond of sump" instead of "pon or sump.

R18-11-210

- Corrected an instance where WOTUS was inadvertently spelled "WTOSU."

R18-11-215

- Non-substantive changes to correct CAS numbers and ensure values are correct.
- Barium missing the distinction T after the PBC and FBC standards.
- Cadmium missing the (d) footnote.
- Corrected instances where (e) was transformed to € and (c) was transformed to © by word editing software.
- Removed CAS number for Tributyltin to avoid confusion and ensure applicability to all tributyltin species.

R18-11-216

Table A

- Split Stronghold Canyon into two reaches with more appropriate DUs.
- Removed Alvord Park Lake, Cortez Park Lake, and Encanto Park Lake from the non-WOTUS protected surface waters list at the request of the City of Phoenix.

Table B

- Modified header language to provide clarity.

Table C

- Modified header language to provide clarity. Multiple commentors asked ADEQ to clarify the meaning of the Table headings used in R18-11-216. The changes made to these headings are non-substantive and serve to better illustrate the regulations that apply to listed waters.

R18-11-217

- Added the word "upstream" after "1/4 mile" to clarify the rule.

11. An agency's summary of the public or stakeholder comments made about the rulemaking and the agency response to the comments:

The Protected Surface Waters List

ADEQ received several comments regarding waters listed on the Protected Surface Waters List in R18-11-216. Generally, those comments expressed needing clarification about how waters on each list were regulated. As a response to those comments, ADEQ has modified the header text for the tables and provides the following response to the comments listed below:

Comment 1: Municipality - *Article 2, Table C has not been in any prior version of the proposed rule and creates uncertainty about whether these waters would be regulated as WOTUS.*

Following an October 5th conversation with ADEQ, the City appreciates that Table C represents ADEQ's effort to increase transparency and that ADEQ's intent is that these waters will be regulated as WOTUS. The City recommends ADEQ add clarifying language to the title and introduction paragraph for Table C, explaining that these waters were determined previously by ADEQ to be WOTUS, are still being regulated as WOTUS, and that these determinations are being re-affirmed due to the passage of time (or other reason, as determined during ADEQ's analysis). As written, there is a significant lack of clarity for permittees, resulting in an increased risk of illicit discharges in these waters and creating an apparent contradiction between Article 1 and Article 2 WOTUS lists.

ADEQ Response: ADEQ has modified the headers for the table and added language to this preamble to clarify that the waters listed in Table C will be regulated as WOTUS. If any of these waters are further evaluated, and the result is a non-WOTUS determination made through any of the mechanisms mentioned in the heading, the water will then be evaluated for regulatory status under Article 2.

Comment 2: Non-Profit - *We appreciate the amount of staff time and effort that goes into the development of a program such as the SWPP. Regarding the proposed Protected Surface Waters List, [non-profit] feels that it is important to protect the waters currently listed in Appendix B of Article 1. The proposed lists in Tables A and B do not appear to include the waters currently listed in Appendix B and the creation of Table C introduces uncertainty. Will those waters listed on Table C no longer be protected? Why was Table C created? What further study would indicate that a waterway should be removed from protections?*

ADEQ Response: ADEQ created the additional tables to provide clarity to stakeholders about the status of WOTUS determinations for Arizona waterways. ADEQ has not changed the regulatory scheme that applies to waters listed in Appendix B.

Comment 3: Mining Group - *[Mining Group] believes that the most prudent approach in the final version of the surface water protection rules would be for ADEQ to remove any type of suggested WOTUS list or any other form of WOTUS designations.*

Such an approach is preferred because the status of the WOTUS definition under the CWA is in flux due to EPA's proposed "Revised Definition of 'Waters of the United States'" (see 86 Fed. Reg. 69,372 (Dec. 7, 2021)) (final version of rule currently being reviewed by the Office of Management and Budget) and the pending U.S. Supreme Court review of the WOTUS-related decision in Sackett v. EPA, 8 F.4th 1075 (9th Cir. 2021) (oral argument heard October 3, 2022). Such an approach would avoid ADEQ creating potentially erroneous assumptions (which could only be changed by subsequent rulemaking) that certain waters are WOTUS even when ADEQ is not clear how WOTUS will be defined three months, six months, or a year from now.

Although we believe not including a list of WOTUS would be the preferred approach, we support ADEQ's addition of language to Table B (WOTUS Protected Surface Waters) of proposed R18-11-216 to clarify that a party can contest a specific water's status as WOTUS in a subsequent permit or enforcement proceeding, in a challenge to identification of the water as an impaired WOTUS, and/or in a challenge to a proposed TMDL for the water as an impaired WOTUS. Because of the regulatory and judicial uncertainty surrounding the definition of WOTUS, such a *recognition of the tentative nature of the waters listed in Table B is appropriate.*

We also support ADEQ's inclusion of a separate Table C that identifies certain water segments as historically regulated as WOTUS but that need further study. We interpret this table as simply listing waters that may qualify as WOTUS now or in the future, but for which additional analysis is necessary and which are not currently identified as "WOTUS protected surface waters" by rule. This reflects the reality that ADEQ has not had the resources to conduct a detailed jurisdictional analysis on every surface water in Arizona, especially those where a significant nexus analysis is required before jurisdiction can be asserted under current law.

Identifying that the WOTUS status of the waters on Table C is uncertain, rather than assuming they constitute WOTUS, is an appropriate approach if ADEQ wishes to have lists of waters in the final rule.

If ADEQ maintains Tables B and C in the final version of the surface water protection rules, [mining group] requests that the preamble language found at the bottom of page 2352, 28 A.A.R., and at the top of page 2353, 28 A.A.R. be revised to ensure that it is consistent with the lead-in language to both Table B (see 28 A.A.R. at 2416) and Table C (see 28 A.A.R. at 2420) of proposed R18-11-216. In addition, ADEQ should make clear that waters appearing on Table C ultimately may be determined not to constitute either a WOTUS or a non-WOTUS protected surface waters (e.g., an ephemeral water that does not possess a significant nexus with a traditional navigable water).

ADEQ Response: ADEQ appreciates the support in labeling tables and the suggestions provided in this comment. ADEQ has modified the headings in the final rulemaking to help provide clarity and consistency about how waters are regulated. ADEQ has listed all known WOTUS as part of the PSWL on either Table B or Table C because the new §49-221 requires that the PSWL contain "[a]ll WOTUS." Lastly, ADEQ has modified the table headings to create clarity that waters listed on Table B and Table C are regulated as WOTUS.

Comment 4: Public Utility - *Under the SWPP, protected surface waters include all WOTUS (Waters of the United States) as defined by 42 U.S.C. § 1362(7) of the Federal Water Pollution Control Act (CWA) and waters of the state that are listed on the protected surface waters list under A.R.S. §49-221(G). A.R.S. § 49-202(38). The Protected Surface Water List (PSWL) in proposed rule A.A.C R18-11-216 identifies three categories of waters in Tables A through C: Non-WOTUS Protected Surface Waters, WOTUS Protected Surface Waters, and Historically Regulated as WOTUS and in Need of Further Study. SRP appreciates ADEQ's efforts to add clarity by distinguishing between*

WOTUS protected surface waters and non-WOTUS protected surface waters, consistent with the statutory framework. See A.R.S. § 49-202 (27) & (54). SRP believes this distinction will assist regulated entities in preparing permit applications because it makes clear which regulations apply to which waters, at least from ADEQ's perspective.

SRP also recognizes the continuing uncertainty regarding the scope of WOTUS impacts ADEQ's ability to make WOTUS/non-WOTUS determinations and that there will need to be an ongoing regulatory process to update Tables A through C. SRP understands that ADEQ began the process of making updated jurisdictional determinations, based on the currently applicable WOTUS definition. SRP also understands that those updated determinations are reflected in "Table A: Non-WOTUS Protected Surface Waters" and "Table B: WOTUS Protected Surface Waters." While the scope of WOTUS may change following the Supreme Court's decision in Sackett v. U.S. Environmental Protection Agency and future rulemakings by the U.S. Environmental Protection Agency, SRP recommends that ADEQ remove the language preceding Table B that identifies ADEQ's determinations as tentative, as such language creates confusion regarding the distinction between the waters listed in Table B and those identified in "Table C: Historically Regulated as WOTUS and in Need of Further Study" (Table C Waters).

It is unclear how Table C Waters fit within the statutory scheme of A.R.S. § 49-221(G) which identifies WOTUS and non-WOTUS protected surface waters. Because ADEQ previously determined such waters to be WOTUS, by including such waters in Appendix B of Title 18, Chapter 11 of the Arizona Administrative Code, SRP interprets the proposed regulation to mean that ADEQ will regulate the Table C Waters as WOTUS until ADEQ has had the opportunity to make an updated jurisdictional determination. Nonetheless, SRP recommends that the regulation expressly state as such in the text preceding Table C. In addition, ADEQ should rename Table C to better reflect ADEQ's intent that the Table C Waters will be regulated as WOTUS until ADEQ makes a different regulatory determination.

SRP also asks that ADEQ clarify the process by which ADEQ intends to address the regulatory status of the Table C Waters after completing the updated jurisdictional determinations. ADEQ should provide for an open and transparent rulemaking process, subject to notice and comment from the public, as it makes determinations regarding the Table C Waters. SRP suggests that ADEQ take a systemic approach and assess waters within the same watershed or sub-watershed to allow interested parties the opportunity toprovide information in a systematic and predictable basis. This formalized rulemaking process is necessary because many of the Table C Waters would be regulated as non-WOTUS protected waters under Table A if they are not considered WOTUS and placed on Table B.

For example, the entirety of the Salt River below Granite Reef Dam would be regulated as a non-WOTUS protected water if it is not a WOTUS. See A.R.S. 49-221(G)(1)(b). Similarly, all perennial and intermittent tributaries to the eight major rivers in Arizona (Bill Williams, Colorado, Gila, Little Colorado, Salt, San Pedro, Santa Cruz and Verde) must be placed on Table A if they are not WOTUS. A.R.S. 49-221(G)(1)(3)(b).

ADEQ Response - As a result of the above comments, ADEQ has provided clarifying language in both the preamble and the headers to each table on the PSWL. To once again clarify, waters that are listed under Table A are regulated by the standards listed in Article 2 that apply to non-WOTUS protected surface waters.

Waters that are listed under Table B are protected as WOTUS under ADEQ's current regulations, and are protected by water quality standards in Article 1. Waters that are listed under Table C are protected as WOTUS under ADEQ's current regulations, and are protected by the water quality standards in Article 1.

ADEQ will continue to adhere to the notice and comment process outlined in the Arizona Administrative Procedure act during any future SWPP rulemakings.

ADEQ's Economic, Social, and Environmental Cost/Benefit (ESE) Analysis

ADEQ received multiple comments regarding the ESE analysis that was submitted as part of the proposed rulemaking. Much of the commentary regarding the process used by ADEQ is not directed at the specific standards adopted or the waters protected under the program but at variables used throughout the process. ADEQ has not significantly modified our economic analysis between the NPRM and the NFRM as a result of these comments. ADEQ has selected excerpts from 4 comments that the agency believes accurately express the differing viewpoints of the comments submitted pursuant to the agency's NPRM. These excerpts regarding this process are copied below. Some comments are not presented in their entirety, as ADEQ is only addressing portions of letters that specifically mention the cost-benefit analysis in this section of the NFRM.

Comment 1: Non-Profit - There *is no requirement to consider the impacts and negative consequences, including the costs, of not establishing water-quality standards at a particular level for excluded ephemeral waters and springs that do not reach Traditional Navigable Waters. The ecosystem services provided by streams and springs should be part of any cost/benefit analysis.*

Social justice and environmental justice should be considered as part of any analysis as well. The narrative accompanying the rule on page 18, Economic, Social and Cost-benefit analysis states, "1. If the water is not categorically excluded from the SWPP as defined in § 49-221 and the economic, social and environmental benefits of adding the water outweigh the economic, environmental and social costs of excluding the water from the list, the water may be added to the PSWL." The rule should be modified to clarify that the water shall be added, rather than may be added to protect additional waters.

The rule includes no consideration of the value of cultural waters for the 22 Tribes and other Indigenous peoples. There is no requirement for protection for this use. This huge oversight in the legislation should be addressed in the implementation of the program. An example is the cost-benefit analysis used for Quitobaquito pond. It does not recognize the economic impact of harm to this pond relative to cultural value nor does it recognize the benefits. As is acknowledged by ADEQ, it also does not adequately address the importance as habitat for rare and endangered species (rule package page 2345).

The Arizona Department of Environmental Quality (ADEQ) should adopt and apply water-quality standards for non-WOTUS protected surface waters based on Outstanding Arizona Waters designation. Additionally, the Surface Water Protection Program should apply to ephemeral waterways and an aquatic and wildlife (ephemeral) designated use should be adopted.

Comment 2: Tribal Group - *Of concern is the cost-benefit analysis in the proposed rule as it may be inadequate for properly recognizing and valuing water bodies that have cultural or spiritual importance to the Tribe and/or other Arizona tribes. Given the Arizona Pollutant Discharge Elimination permit for Resolution Copper Mine, LLC, and the resulting litigation initiated by the Tribe, the Tribe is wary of efforts to assign monetary value to cultural or spiritual resources. Furthermore, numerous off-reservation streams, washes and springs that are sacred to Arizona's Native American tribes may slip through the draft classification scheme.*

Comment 3: Mining Group - *Commenter has several concerns with ADEQ's proposed approach to calculating and considering the economic, social, and environmental costs and benefits that (1) would result from the adoption of a water quality standard at a particular level or for a particular water category for non-WOTUS surface waters (see A.R.S. § 49-221(A)(2)); or (2) would be used to determine whether to add or remove non-WOTUS surface waters from ADEQ's protected surface water list (see A.R.S. § 49-221(G)(4), (6)). These concerns include:*

ADEQ's cost-benefit approach does not appear to accurately evaluate the potential economic, social, and *environmental costs and benefits of imposing water quality standards on non-WOTUS surface waters, given that ADEQ simply is proposing standards that are equal to those imposed on WOTUS waters using very conservative approaches and criteria following EPA guidance. The requirement for ADEQ to conduct a cost-benefit approach under A.R.S. § 49-221(A)(2) was intended to avoid imposition of national criteria adopted by EPA, which do not necessarily account for the unique nature of Arizona's waters, to non-WOTUS surface waters in Arizona. AMA recognizes that some of Arizona's existing surface water quality criteria for WOTUS waters, and which are being applied to non-WOTUS waters in the NPRM, do account for Arizona species or other Arizona-specific conditions. However, this is not true across the entire suite of criteria that are being proposed to be applied to non-WOTUS protected surface waters.*

There does not appear to be a separate cost-benefit approach or analysis when ADEQ is considering adding or removing non-WOTUS surface waters from the protected surface water list or when it is evaluating whether to apply EPA-based surface water quality standards to non-WOTUS waters. These are two different determinations that should consider different costs and benefits and potential approaches, yet that is not fully addressed in the NPRM. For instance, after discussing some cost and benefit factors and including a table on what ADEQ describes as class 1 through class 3 surface features, ADEQ concludes that based on its modeling it proposes to protect class 1 and class 2 waters with water quality standards that are like those applied to waters subject to only federal jurisdiction. See 28 A.A.R. at 2345. However, the only cost categories used were for "404 permits," "mitigation," and "ADEQ Admin." The costs categories do not make sense because the evaluated classes of surface waters are non-WOTUS and therefore would not be subject to 404 permitting or mitigation. In contrast, such waters would be subject to costs associated with potential AZPDES permitting (including under both individual and general permits), compliance with surface water quality standards at the same level as federally-regulated waters, potential impaired waters listings and TMDLs, compliance with best management practices for activities occurring within the ordinary high water mark of such waters or for certain activities within the bed and banks of upstream waters that materially impact the downstream non-WOTUS protected surface water. None of these costs are even listed, mentioned, or discussed in ADEQ's cost-benefit analysis.

Commentor questions ADEQ's and its consultant's use of the joint EPA and Corps 2021 Economic Analysis for the Proposed Revised Definition of WOTUS Rule ("2021 Economic Analysis") as a basis for determining costs and benefits related to imposition of standards on non-WOTUS waters. Overall, we strongly disagree with using an economic model that was crafted specifically to justify a broad expansion of federal jurisdiction over surface waters in the United States as the basis for the cost/benefit analysis under Arizona's surface water protection program. Use *of such an economic model likely resulted in biases towards overestimating benefits and underestimating costs.*

We also agree with many of the criticisms to the 2021 Economic Analysis contained within an expert report submitted to EPA and the Corps as an exhibit to the Waters Advocacy Coalition's comments on EPA's and the Corps' revised definition of WOTUS. See David Sunding, Ph.D., and Gina Waterfield, Ph.D., The Brattle Group, Review of the Environmental Protection Agency and Department of the Army 2021 Economic Analysis for the Proposed "Revised Definition of 'Waters of the United States'" Rule (Feb. 7, 2022) (copy attached and incorporated as part of these comments). The criticisms, which would apply to ADEQ's use of the 2021 Economic Analysis, include:

EPA and the Corps failed to explain the significant differences between the estimates of benefits and costs found in the 2021 Economic Analysis and the estimates used just two years prior by the same agencies for the Navigable Waters Protection Rule. See id. at 7.

The cost estimate analysis in the 2021 Economic Analysis fails to quantify costs associated with avoidance and minimization measures, even though such costs are likely to be significant in comparison with other identified permit costs. See id. at 9-10.

The cost estimate analysis in the 2021 Economic Analysis fails to quantify implicit costs, such as project delays or transferring projects from jurisdictional to non-jurisdictional areas. See id. at 10.

The benefit estimate analysis in the 2021 Economic Analysis relies heavily on a contingency valuation approach, which has a "tendency [for] survey respondents to provide inaccurate and inconsistent answers. The agencies do not discuss these important shortcomings of the studies that form the basis of their benefits estimate, or the likely bias as a result." Id. at 13.

The willingness to pay estimates relating to perceived benefits are derived from outdated and inaccurate studies. See id.

Because of the numerous issues outlined above with ADEQ's reliance on the EPA and Corps 2021 Economic Analysis, AMA is concerned with ADEQ's use of a benefit transfer approach when calculating costs and benefits and whether this approach, at least as applied by ADEQ for surface waters in Arizona, appropriately calculates potential costs and benefits related to either designation waters as non-WOTUS protected surface waters or *imposition of water quality standards on non-WOTUS waters. The selection of the cost and benefit categories or inputs will drive the usefulness of this approach.*

We disagree with many of the cost and benefit inputs used in McClure's second report (including in the table found at 28 A.A.R. at 2345) especially as applied to a cost/benefit analysis for determining whether to impose certain water quality standards on non-WOTUS protected surface waters.

Comment 4: Conservation Group - *I have read ADEQ's document packet - Environmental , Social, and Economic Cost/Benefit Analysis. I certainly appreciate the complex nature of the task to assign costs and benefits to determine the selection and importance of waters to be included for protection.*

As the analysis provided by ADEQ and consultants in the documents reported, assigning costs is a much more straightforward task than determining benefits. This is especially true for waters that have perhaps a less clear determination of their value, or are appreciated by consumers or state residents in a way that defies current best attempts at estimating that value.

I understand the attempt to utilize the three scenarios in the document as a way to explain the range of possible cost/benefit analyses that could be accomplished with the tools that ADEQ is considering.
However, the use of these particular scenarios and the analyses of the benefits provided in the examples gave cause for concern.

It is critical that all waters are valued for their important characteristics, many of which may not be adequately measured by the tools that you are considering. Some examples that are perhaps more likely to be erroneously valued are:

- waters that are home to, or provide habitat used by endangered or threatened species
- waters that are valued by anglers because they hold populations of wild, introduced trout (brown, rainbow, and brook trout) that are a rare commodity in Arizona due to the limited cold water habitat in our state
- waters that provide protection, and current or eventual catch and release fishing opportunity for recovery populations of native Gila or Apache trout.

A point of concern in your evaluation of waters related to fishing is whether the act of fishing is intended to result in *consumption of the fish. While many of the waters on the ADEQ list fit that criteria, there are many more that do not. These waters are designated as catch and release waters by Arizona Game and Fish Department (AZGFD), and are of incredible value to the state.*

Gila trout and our state fish, Apache trout, provide a useful example to our assertion. Both of these native trout were once listed as endangered in Arizona. Apache trout were downlisted to threatened in 1975, and Gila trout were downlisted in 2006 due to an incredible amount of work and investment by several agencies and organizations including: AZGFD, United States Forest Service (USFS), United States Fish and Wildlife Service (USFWS), the White Mountain Apache Tribe, and Trout Unlimited (TU). If the water quality where these recovery populations reside is not maintained, and that contributes to these fish being returned to their endangered status, then these agencies and organizations will incur tremendous cost to bring them back from that designation.
There is an economic driver component for protecting these fish that may not be accounted for in the Department's analysis as well. These native, threatened trout in the AZGFD identified recovery streams are highly sought by anglers, fly fishers in particular, who will travel great distances to catch and release these rare and beautiful trout.

Native Gila and Apache trout are valued by anglers across the state, as well as anglers from across the country and the world who are already coming to the recovery waters that have been opened to catch and release fishing in order to add these special trout to their catch list. AZGFD has a wild trout challenge that anglers from across the country participate in. It is unclear if the economic benefit to the state as a result of anglers traveling to Arizona and the purchases they make (fishing license, fishing equipment, plane fare, rental cars, lodging, meals, etc.) is adequately calculated in your cost/benefit tools. This becomes further complicated by the fact that as AZGFD works to improve these identified recovery streams for Gila and Apache trout, that it sometimes takes several years for the populations to grow and stabilize to the point that catch and release fishing can occur on these streams.

There is another element of protecting these waters that are home to these native and wild trout and other protected species, that may not be adequately included in the calculations that we want to address. Many residents value these waters because they provide habitat for species that these residents do not want to see vanish from Arizona. That puts an additional premium on the quality of the water that is maintained in these streams. Your document notes incremental vs absolute attention to the water quality of a protected stream or lake. Absolute water quality is critical to these streams.

The value of maintaining the highest quality water possible is important to another concern that we have. There is *the exponential cost to deal with these protected waters, after the fact, if they are spoiled. The Four Forest Restoration Initiative (4FRI) provides an example to what we mean. We have seen the devastation caused in our state by the ever increasing threat of wildfires. In the case of 4FRI, this footprint includes watersheds that are home to many of the trout streams that we feel are important to protect. It also supplies water to Rim Country communities, and is an extremely important water source for the Phoenix Metro area. Consider the minimal preventive costs of maintaining the quality of these protected waters to that of the treatment costs of severely tainted water before it can be used by people downstream. Add to that the restoration costs to the watershed if an important water source for millions is damaged. We are not sure that the Department's tools provide for this aspect of cost/benefit analysis.*

We ask that ADEQ expand their search for tools that better capture the inherent value of Nature to a greater degree than the tools that Department has considered to this point. We offer this link to the Intergovernmental Science-Policy platform on Biodiversity and Ecosystem Services (IPBES) "Assessment Report on the Diverse Values and Valuation of Nature": https://ipbes.net/media_release/Values_Assessment_Published#:~:text=%E2%80%9CNature%20is%20what%20sustains%20us,left%20o ut%20of%20decision%20making as a possible source that the Department might want to explore. In addition to a review of this tool by ADEQ, we hope that a more thorough review by ADEQ of other possible tools to better capture the value of the kinds of waters we have highlighted will occur and result in strategies to better assess the true benefits of these valued waters.

ADEQ Answer - The regulations adopted in this rulemaking accomplish two ESE analysis-related statutory requirements. First, the ESE analysis considers the water quality standards adopted by ADEQ, then applies those water quality standards to certain waters to ensure that the benefits of protecting any listed waters outweigh the cost of protecting those waters. Second, this rulemaking establishes a procedure for determining economic, social, and environmental costs/benefits in any future SWPP rulemaking.

The regulations adopted by ADEQ in this rulemaking at R18-11-213 are put in place to provide regulatory guardrails to any future SWPP rulemakings. These guidelines are a recognition that rulemaking done pursuant to the existing statutory authority could take many forms. Potentially, future rulemaking could add or remove waters from the PSWL without modifying water quality standards. The opposite is also true, ADEQ could modify water quality standards for non-WOTUS protected surface waters without modifying what waters are protected. The important part of the process is that the ESE valuation process must be tailored to the rulemaking that ADEQ is looking to accomplish.

The idea of a tailored economic analysis is extremely important in the context of this initial SWPP rulemaking. ADEQ performed two ESE analyses with the help of our contracted economists to ensure the requirements of the statute were met. As mentioned earlier in this preamble, one of the issues with the first analysis ADEQ completed is that it lacked specificity with regard to the variables that were being applied. To state that in another way, in a vacuum, it's impossible to determine costs or benefits without applying the analysis in some specific way.

ADEQ's second ESE analysis addresses that deficiency and quantifies a set of standards that are protective of non-WOTUS protected surface waters without being overly burdensome. The cost of adopting these standards depends on the nature and type of discharge to the protected water body. At the time of this rulemaking, there are no permits currently issued for any discharges to non-WOTUS waters on the protected surface waters list. As applied, the only entity that will bear costs associated with the adopted standards is ADEQ for the purposes of water quality sampling and administration.

In the event that there is a permitted discharge to a non-WOTUS protected surface water, ADEQ has adopted water quality standards that could affect both the costs and benefits of the regulations in this NFRM. The mixing zones standards in R18-11-207, the natural background standards in R18-11-207, the schedule of compliance standard in R18-11-208, the variance standard in R18-11-209, and the site-specific standard rule in R18-11-210 are all water quality standards adopted in this rulemaking that could affect the enforceable limit of any permit issued under the new SWPP.

The hypothetical nature of any of the costs/benefits included in ADEQ's model are extremely important to consider because, as adopted, there are no ascertainable costs/benefits that the agency can assign to the SWPP because there simply is not a permit that will be issued pursuant to it after adoption. ADEQ rulemaking requirements included establishing criteria for the economic, social, and environmental costs and benefits for listing or delisting waters for state-level protection, and for setting standards for non-WOTUS and other waters of the state. Accordingly, the consulting team focused on variables pertaining to modeling the economic costs and benefits associated with decisions for adopting water quality standards for non-WOTUS waters and other waters of the state, and for listing or delisting waters for protection within a new Surface Water Protection Program as well as a parallel consideration in recognizing, at least a qualitative sense, the social effects associated with waterbody actions.

Pursuant to ADEQ’s direction, the Consultants used a national study that analyzed economic effects of applying a surface water protection program as a general framework for the Arizona-specific model. The national study includes both national and state-level costs as well as estimates for benefits, along with a proposed framework for evaluating benefits at smaller levels of geography. Ultimately, the ADEQ model used in this rulemaking generally reflects the scope, methodology, and data sources used in the national study, but the consultants adapted and supplemented the framework to address the policy actions that are most likely to occur in Arizona.

This approach is consistent with the requirements of the statute and simultaneously gave ADEQ the specific type of analysis necessary to protect the listed waters, as well as a way to quantify the potential costs and benefits of the standards the agency is adopting. ADEQ released the consultant's report to the public in May of this year for comment and received no written comments on the material until the publication of the NPRM. ADEQ has a statutory deadline of December 31st, 2022, to adopt the rules in this NFRM.

ADEQ appreciates the comments submitted on our ESE analysis, especially the reports that help quantify the costs and benefits of a potential surface water protection program in Arizona. The agency has cataloged these submitted studies for use in any future SWPP rulemaking.

Commenters also suggested additional costs or benefits categories that could be included in future rulemaking. These variables included environmental justice considerations, cultural impacts, prospective costs that could potentially be incurred if a water was determined to be impaired, benefits associated with the preservation of endangered species, and benefits associated with ecosystem services. ADEQ has noted these comments and will explore expanding our ESE analysis in any future rulemaking.

Each SWPP rulemaking is unique, and ADEQ encourages stakeholders to continue to engage on the topic of developing an appropriate ESE analysis for each individual iteration of this program. Variables that are determinative in one analysis may not be included in another. The rules adopted by ADEQ to provide regulatory guardrails in future SWPP rulemakings ensure that a public process relevant to the specific rule is provided by the agency whenever water quality standards are modified, or waters are added or removed from the PSWL.

Typographical Errors

ADEQ Response - ADEQ has addressed typographical errors pointed out by commenters in this NFRM. These changes are outlined in the modifications section of the NFRM.

Protection for Non-WOTUS Ephemeral Streams

Through the rulemaking process, ADEQ has received multiple comments regarding the protection of ephemeral streams under the state program. The enabling legislation for the SWPP prevents ADEQ from adding those waters as non-WOTUS-protected surface waters.

Request for the Addition or Removal of Certain Waters

During the rulemaking process, ADEQ received comments from several parties asking to either add or remove waters from the Protected Surface Waters List.

ADEQ received requests to list the following waters, or portions of the following waters, on the Protected Surface Waters List:

1. Benny Creek (LC)
2. Benton Creek (LC)
3. Grapevine Creek (Agua Fria drainage/MG)
4. Soldier Creek - Black River (SR)
5. Hayground Creek (SR)
6. McKittrick Creek (UG)

ADEQ received requests to remove the following waters, or portions of the following waters, from the Protected Surface Waters List:

1. Alvord Park Lake
1. Cortez Park Lake
2. Encanto Park Lake
3. Garden Canyon Creek
4. Mineral Creek
5. Whitewater Draw
6. Queen Creek

ADEQ uses a methodology documented across two technical papers to add or remove waters from the PSWL. The technical paper describing the process of adding waters to the PSWL can be accessed here: https://static.azdeq.gov/wqd/swpp/pswl_wp.pdf. The technical paper that describes the WOTUS evaluation process can be accessed here: https://static.azdeq.gov/wqd/swpp/sig_nex_tp.pdf.

For those waters that were nominated for listing on the PSWL, WOTUS evaluations are ongoing to determine jurisdictional status. For waters that were requested to be removed, ADEQ removed Alvord Park Lake, Cortez Park Lake, and Encanto Park Lake from the PSWL. These are non-WOTUS ornamental and urban lakes, which require a confirmation from the lake owner for listing. The lake owner requested removal during the NPRM comment period. Garden Canyon Creek, Mineral Creek, Whitewater Draw, and Queen Creek are currently listed in Appendix B and are waters listed in Table C. These waters need further evaluation to determine jurisdictional status.

12. All agencies shall list other matters prescribed by statute applicable to the specific agency or to any specific rule or class of rules. Additionally, an agency subject to Council review under A.R.S. §§ 41-1052 and 41-1055 shall respond to the following questions:

None.

a. Whether the rule requires a permit, whether a general permit is used and if not, the reasons why a general permit is not used:

ADEQ's regulations do allow for general permits for many different types of facilities, but not all facilities qualify for general permits. In the case that a general permit does not apply this rule may require that entities that discharge to non-WOTUS protected surface water apply for an individual AZPDES permit. Requirements for discharge vary depending on the facility, so many of these discharges would not be able to receive coverage under a general permit.

b. Whether a federal law is applicable to the subject of the rule, whether the rule is more stringent than federal law and if so, citation to the statutory authority to exceed the requirements of federal law:

The Clean Water Act and implementing regulations adopted by EPA apply to the subject of this rule, as described in Section 5 above. Article 2 of this rulemaking establishes water quality standards that are applicable to surface waters that are not protected under the Clean Water Act. These standards are not more stringent than those the standards implemented by federal law, but they apply to waters that may not be protected under federal law.

ADEQ was given explicit statutory authority to develop a program to protect these surface waters by HB2691(2021). That bill is codified at A.R.S. §§ 49-202.01, 49-221, 49-255.04, and 49-255.05.

c. **Whether a person submitted an analysis to the agency that compares the rule's impact of the competitiveness of business in this state to the impact on business in other states:**
No such analysis was submitted.

13. **A list of any incorporated by reference material as specified in A.R.S. § 41-1028 and its location in the rules:**
None.

14. **Whether the rule was previously made, amended or repealed as an emergency rule. If so, cite the notice published in the *Register* as specified in R1-1-409(A). Also, the agency shall state where the text was changed between the emergency and the final rulemaking packages:**

Not applicable.

15. **The full text of the rules follows:**

CHAPTER 11. DEPARTMENT OF ENVIRONMENTAL QUALITY – WATER QUALITY STANDARDS

ARTICLE 1. WATER QUALITY STANDARDS FOR SURFACE WATERS

ARTICLE 2. ~~REPEALED~~ WATER QUALITY STANDARDS FOR NON-WOTUS PROTECTED SURFACE WATERS

Section

ARTICLE 1. WATER QUALITY STANDARDS FOR SURFACE WATERS

R18-11-101. Definitions

The following terms apply to this Article:

1. “Acute toxicity” means toxicity involving a stimulus severe enough to induce a rapid response. In aquatic toxicity tests, an effect observed in 96 hours or less is considered acute.
2. “Agricultural irrigation (AgI)” means the use of a surface water for crop irrigation.
3. “Agricultural livestock watering (AgL)” means the use of a surface water as a water supply for consumption by livestock.
4. “Annual mean” is the arithmetic mean of monthly values determined over a consecutive 12-month period, provided that monthly values are determined for at least three months. A monthly value is the arithmetic mean of all values determined in a calendar month.
5. “Aquatic and wildlife (cold water) (A&Wc)” means the use of a surface water by animals, plants, or other cold-water organisms, generally occurring at an elevation greater than 5000 feet, for habitation, growth, or propagation.
6. “Aquatic and wildlife (effluent-dependent water) (A&Wedw)” means the use of an effluent-dependent water by animals, plants, or other organisms for habitation, growth, or propagation.
7. “Aquatic and wildlife (ephemeral) (A&We)” means the use of an ephemeral water by animals, plants, or other organisms, excluding fish, for habitation, growth, or propagation.
8. “Aquatic and wildlife (warm water) (A&Ww)” means the use of a surface water by animals, plants, or other warm-water organisms, generally occurring at an elevation less than 5000 feet, for habitation, growth, or propagation.
9. “Arizona Pollutant Discharge Elimination System (AZPDES)” means the point source discharge permitting program established under 18 A.A.C. 9, Article 9.
10. “Assimilative capacity” means the difference between the baseline water quality concentration for a pollutant and the most stringent applicable water quality criterion for that pollutant.

11. “Clean Water Act” means the Federal Water Pollution Control Act [33 U.S.C. 1251 to 1387].
12. “Complete Mixing” means the location at which concentration of a pollutant across a transect of a surface water differs by less than five percent.
13. “Criteria” means elements of water quality standards that are expressed as pollutant concentrations, levels, or narrative statements representing a water quality that supports a designated use.
14. “Critical flow conditions of the discharge” means the hydrologically based discharge flow averages that the director uses to calculate and implement applicable water quality criteria to a mixing zone’s receiving water as follows:
    a. For acute aquatic water quality standard criteria, the discharge flow critical condition is represented by the maximum one-day average flow analyzed over a reasonably representative timeframe.
    b. For chronic aquatic water quality standard criteria, the discharge flow critical flow condition is represented by the maximum monthly average flow analyzed over a reasonably representative timeframe.
    c. For human health based water quality standard criteria, the discharge flow critical condition is the long-term arithmetic mean flow, averaged over several years so as to simulate long-term exposure.
15. “Critical flow conditions of the receiving water” means the hydrologically based receiving water low flow averages that the director uses to calculate and implement applicable water quality criteria:
    a. For acute aquatic water quality standard criteria, the receiving water critical condition is represented as the lowest one-day aver-age flow event expected to occur once every ten years, on average (1Q10).
    b. For chronic aquatic water quality standard criteria, the receiving water critical flow condition is represented as the lowest seven-consecutive-day average flow expected to occur once every 10 years, on average (7Q10), or
    c. For human health based water quality standard criteria, in order to simulate long-term exposure, the receiving water critical flow condition is the harmonic mean flow.
16. “Deep lake” means a lake or reservoir with an average depth of more than 6 meters.
17. “Designated use” means a use specified in Appendix B of this Article for a surface water.
18. “Domestic water source (DWS)” means the use of a surface water as a source of potable water. Treatment of a surface water may be necessary to yield a finished water suitable for human consumption.
19. “Effluent-dependent water (EDW)” means a surface water or portion of a surface water~~, classified under R18-11-113~~ that consists of a point source discharge ~~of wastewater~~ without which the surface water would be ephemeral. ~~An effluent-dependent water is a surface water that, without the point source discharge of wastewater, would be an ephemeral water.~~ An effluent-dependent water may be perennial or intermittent depending on the volume and frequency of the point source discharge of treated wastewater.
20. “Ephemeral water” means a surface water ~~that has a channel that is at all times above the water table and~~ or portion of surface water that flows or pools only in direct response to precipitation.
21. “Existing use” means a use attained in the waterbody on or after November 28, 1975, whether or not it is included in the water quality standards.
22. “Fish consumption (FC)” means the use of a surface water by humans for harvesting aquatic organisms for consumption. Harvestable aquatic organisms include, but are not limited to, fish, clams, turtles, crayfish, and frogs.

23. “Full-body contact (FBC)” means the use of a surface water for swimming or other recreational activity that causes the human body to come into direct contact with the water to the point of complete submergence. The use is such that ingestion of the water is likely and sensitive body organs, such as the eyes, ears, or nose, may be exposed to direct contact with the water.
24. “Geometric mean” means the nth root of the product of n items or values. The geometric mean is calculated using the following formula:

$$GM_y = \sqrt[n]{(Y_1)(Y_2)(Y_3)(Y_n)}$$

25. “Hardness” means the sum of the calcium and magnesium concentrations, expressed as calcium carbonate (CaCO3) in milligrams per liter.
26. “Igneous lake” means a lake located in volcanic, basaltic, or granite geology and soils.
27. “Intermittent water” means a ~~stream or reach~~ surface water or portion of surface water that flows continuously ~~only at~~ during certain times of the year and more than in direct response to precipitation, such as when it receives water from a spring, elevated groundwater table or ~~from~~ another surface source, such as melting ~~snow~~ snowpack.
28. “Mixing zone” means an area or volume of a surface water that is contiguous to a point source discharge where dilution of the discharge takes place.
29. “Oil” means petroleum in any form, including crude oil, gasoline, fuel oil, diesel oil, lubricating oil, or sludge.
30. “Outstanding Arizona water (OAW)” means a surface water that is classified as an outstanding state resource water by the Director under R18-11-112.
31. “Partial-body contact (PBC)” means the recreational use of a surface water that may cause the human body to come into direct contact with the water, but normally not to the point of complete submergence (for example, wading or boating). The use is such that ingestion of the water is not likely and sensitive body organs, such as the eyes, ears, or nose, will not normally be exposed to direct contact with the water.
32. “Perennial water” means a surface water or portion of surface water that flows continuously throughout the year.
33. “Pollutant” means fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and mining, industrial, municipal, and agricultural wastes or any other liquid, solid, gaseous, or hazardous substance. A.R.S § 49-201(29)
34. “Pollutant Minimization Program” means a structured set of activities to improve processes and pollutant controls that will prevent and reduce pollutant loadings.
35. “Practical quantitation limit” means the lowest level of quantitative measurement that can be reliably achieved during a routine laboratory operation.

36. “Reference condition” means a set of abiotic physical stream habitat, water quality, and site selection criteria established by the Director that describe the typical characteristics of stream sites in a region that are least disturbed by environmental stressors. Reference biological assemblages of macroinvertebrates and algae are collected from these reference condition streams for calculating the Ari-zona Indexes of Biological Integrity thresholds.
37. “Regional Administrator” means the Regional Administrator of Region IX of the U.S. Environmental Protection Agency.
38. “Regulated discharge” means a point-source discharge regulated under an AZPDES permit, a discharge regulated by a § 404 permit, and any discharge authorized by a federal permit or license that is subject to state water quality certification under § 401 of the Clean Water Act.
39. “Riffle habitat” means a stream segment where moderate water velocity and substrate roughness produce moderately turbulent conditions that break the surface tension of the water and may produce breaking wavelets that turn the surface water into white water.
40. “Run habitat” means a stream segment where there is moderate water velocity that does not break the surface tension of the water and does not produce breaking wavelets that turn the surface water into white water.
41. “Sedimentary lake” means a lake or reservoir in sedimentary or karst geology and soils.
42. “Shallow lake” means a lake or reservoir, excluding an urban lake, with a smaller, flatter morphology and an average depth of less than 3 meters and a maximum depth of less than 4 meters.
43. “Significant degradation” means:
    a. The consumption of 20 percent or more of the available assimilative capacity for a pollutant of concern at critical flow conditions, or
    b. Any consumption of assimilative capacity beyond the cumulative cap of 50 percent of assimilative capacity.
44. “Surface water” means ~~“Navigable waters”~~ “WOTUS” as defined in A.R.S. ~~§ 49-201(22)~~ § 49-201(53).
45. “Total nitrogen” means the sum of the concentrations of ammonia (NH3), ammonium ion (NH4+), nitrite (NO2), and nitrate (NO3), and dissolved and particulate organic nitrogen expressed as elemental nitrogen.
46. “Total phosphorus” means all of the phosphorus present in a sample, regardless of form, as measured by a persulfate digestion procedure.
47. “Toxic” means a pollutant or combination of pollutants, that after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in the organism or its offspring.
48. “Urban lake” means a manmade lake within an urban landscape.
49. “Use attainability analysis” means a structured scientific assessment of the factors affecting the attainment of a designated use including physical, chemical, biological, and economic factors.
50. “Variance” means a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) that reflect the highest attainable condition during the term of the variance.
51. “Wadable” means a surface water can be safely crossed on foot and sampled without a boat.

52. “Wastewater” does not mean:
   a. Stormwater,
   b. Discharges authorized under the De Minimus General Permit,
   c. Other allowable non-stormwater discharges permitted under the Construction General Permit or the Multi-sector General Permit, or
   d. Stormwater discharges from a municipal storm sewer system (MS4) containing incidental amounts of non-stormwater that the MS4 is not required to prohibit.
53. “Wetland” means an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland includes a swamp, marsh, bog, cienega, tinaja, and similar areas.
54. “Zone of initial dilution” means a small area in the immediate vicinity of an outfall structure in which turbulence is high and causes rapid mixing with the surrounding water.

Appendix A

Table 1. Water Quality Criteria By Designated Use (see f)

Parameter	CAS NUMBER	DWS (µg/L)	FC (µg/L)	FBC (µg/L)	PBC (µg/L)	A&Wc Acute (µg/L)	A&Wc Chronic (µg/L)	A&Ww Acute (µg/L)	A&Ww Chronic (µg/L)	A&Wedw Acute (µg/L)	A&Wedw Chronic (µg/L)	A&We Acute (µg/L)	AgI (µg/L)	AgL (µg/L)
Acenaphthene	83329	420	198	56,000	56,000	850	550	850	550	850	550			
~~Acenaphthylene~~	~~208968~~	~~420~~		~~56,000~~	~~56,000~~									
Acrolein	107028	3.5	1.9	467	467	3	3	3	3	3	3			
Acrylonitrile	107131	~~0.006~~ 0.06	0.2	~~9~~ 3	37,333	3,800	250	3,800	250	3,800	250			
Alachlor	15972608	2		9,333	9,333	2,500	170	2,500	170	2,500	170			
Aldrin	309002	0.002	0.00005	~~0.27~~ 0.08	28	3		3		3		4.5	0.003	See (b)
Alpha Particles (Gross) Radioactivity		15 pCi/L See (h)												
Ammonia	7664417					See (e) & Tables 11 (present) & 14 (absent)	See (e) & Tables 13 (present) & 17 (absent)	See (e) & Tables 12 (present) & 15 (absent)	See (e) & Tables 13 (present) & 16 (absent)	See (e) & Table 15 (absent)	See (e) & Table 16 (absent)			
Anthracene	120127	2,100	74	280,000	280,000									
Antimony	7440360	6 T	640 T	747 T	747 T	88 D	30 D	88 D	30 D	1,000 D	600 D			
Arsenic	7440382	10 T	80 T	30 T	280 T	340 D	150 D	340 D	150 D	340 D	150 D	440 D	2,000 T	200 T
Asbestos	1332214	See (a)												
Atrazine	1912249	3		32,667	32,667									

Barium	7440393	2,000 T		~~186,667 T~~ 98,000 T	~~186,667 T~~ 98,000 T									
Benz(a)anthracene	56553	0.005	0.02	~~47~~ 0.2	~~280~~ 0.2									
Benzene	71432	5	~~114~~ 140	~~133~~ 93	3,733	2,700	180	2,700	180	8,800	560			
Benzo[b]fluoranthene ~~Benzfluoranthene~~	205992	0.005	0.02	~~47~~ 1.9	~~280~~ 1.9									
Benzidine	92875	0.0002	0.0002	~~0.02~~ 0.01	2,800	1,300	89	1,300	89	1,300	89	10,000	0.01	0.01
Benzo(a)pyrene	50328	0.2	~~0.1~~ 0.02	~~47~~ 0.2	~~280~~ 0.2									
Benzo(k)fluoranthene	207089	0.005	0.02	~~47~~ 1.9	~~280~~ 1.9									
Beryllium	7440417	4 T	84 T	1,867 T	1,867 T	65 D	5.3 D	65 D	5.3 D	65 D	5.3 D			
Beta particles and photon emitters		4 millirems /year See (i)												
~~Bis(2-chloroethoxy) methane~~	~~111911~~	~~21~~		~~2,800~~	~~2,800~~									
Bis(2-chloroethyl) ether	111444	0.03	0.5	~~4~~ 1	~~4~~ 1	120,000	6,700	120,000	6,700	120,000	6,700			
Bis(2-chloroisopropyl) ether	108601	280	3,441	37,333	37,333									
~~Bis(chloromethyl) ether~~	~~542881~~	~~0.00015~~		~~0.02~~										
Boron	7440428	1,400 T		186,667 T	186,667 T								1,000 T	
Bromodichloromethane	75274	TTHM See (g)	17	TTHM	18,667									
4-Bromophenyl phenyl ether	101553					180	14	180	14	180	14			
Bromoform	75252	TTHM See (g)	133	~~591~~ 180	18,667	15,000	10,000	15,000	10,000	15,000	10,000			
Bromomethane	74839	9.8	299	1,307	1,307	5,500	360	5,500	360	5,500	360			
Butyl benzyl phthalate	85687	1,400	386	186,667	186,667	1,700	130	1,700	130	1,700	130			
Cadmium	7440439	5 T	~~6 T~~ 84 T	~~467T~~ 700 T	~~467T~~ 700 T	See (d) & Table 2	See (d) & Table 3	See (d) & Table 2	See (d) & Table 3	See (d) & Table 2	See (d) & Table 3	See (d) & Table 2	50	50
Carbaryl	63252					2.1	2.1	2.1	2.1	2.1	2.1	2.1		
Carbofuran	1563662	40		4,667	4,667	650	50	650	50	650	50			
Carbon tetrachloride	56235	5	~~3~~ 2	~~67~~ 11	~~3,733~~ 980	18,000	1,100	18,000	1,100	18,000	1,100			
Chlordane	57749	2	0.0008	~~13~~ 4	467	2.4	0.004	2.4	0.2	2.4	0.2	3.2		
Chlorine (total residual)	7782505	4,000		~~93,333~~ 4000	~~93,333~~ 4000	19	11	19	11	19	11			
Chlorobenzene	108907	100	1,553	18,667	18,667	3,800	260	3,800	260	3,800	260			
~~Chloroethane~~	~~75003~~	~~280~~		~~93,333~~	~~93,333~~									
2-Chloroethyl vinyl ether	110758					180,000	9,800	180,000	9,800	180,000	9,800			
Chloroform	67663	TTHM See (g)	~~2,133~~ 470	~~9,333~~ 230	9,333	14,000	900	14,000	900	14,000	900			
p-Chloro-m-cresol	59507					15	4.7	15	4.7	15	4.7	48,000		
Chloromethane	74873					270,000	15,000	270,000	15,000	270,000	15,000			
beta-Chloronaphthalene	91587	~~2240~~ 560	~~1267~~ 317	~~298,667~~ 74,667	~~298,667~~ 74,667									

2-Chlorophenol	95578	35	30	4,667	4,667	2,200	150	2,200	150	2,200	150			
Chloropyrifos	2921882	21		2,800	2,800	0.08	0.04	0.08	0.04	0.08	0.04			
Chromium III	16065831	~~10,500~~	75,000 T	1,400,000 T	1,400,000 T	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4		
Chromium VI	18540299	21 T	150 T	2,800 T	2,800 T	16 D	11 D	16 D	11 D	16 D	11 D	34 D		
Chromium (Total)	7440473	100 T											1,000	1,000
Chrysene	218019	0.005	0.02	~~0.6~~ 19	~~0.6~~ 19									
Copper	7440508	1,300 T		1,300 T	1,300 T	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	5,000 T	500 T
Cyanide (as free cyanide)	57125	200 T	~~504 T~~ 16,000 T	~~588 T~~ 18,667 T	~~588 T~~ 18,667 T	22 T	5.2 T	41 T	9.7 T	41 T	9.7 T	84 T		200 T
Dalapon	75990	200	8,000	28,000	28,000									
DDT and its breakdown products	50293	0.1	~~0.0003~~ 0.0002	~~14~~ 4	467	1.1	0.001	1.1	0.001	1.1	0.001	1.1	0.001	0.001
Demeton	8065483						0.1		0.1		0.1			
Diazinon	333415					0.17	0.17	0.17	0.17	0.17	0.17	0.17		
Dibenz (ah) anthracene	53703	~~0.350~~ 0.005	0.02	~~47.0~~ 1.9	~~280.0~~ 1.9									
Dibromochloromethane	124481	TTHM See (g)	13	TTHM	18,667									
1,2-Dibromo-3-chloropro-pane	96128	0.2		2,800	2,800									
1,2-Dibromoethane	106934	~~0.02~~ 0.05		~~2~~ 8,400	8,400									
Dibutyl phthalate	84742	700	899	93,333	93,333	470	35	470	35	470	35	1,100		
1,2-Dichlorobenzene	95501	600	205	84,000	84,000	790	300	1,200	470	1,200	470	5,900		
1,3-Dichlorobenzene	541731					2,500	970	2,500	970	2,500	970			
1,4-Dichlorobenzene	106467	75	5755	373,333	~~373.333~~ 373,333	560	210	2,000	780	2,000	780	6,500		
3,3'-Dichlorobenzidine	91941	0.08	0.03	~~10~~ 3	~~10~~ 3									
1,2-Dichloroethane	107062	5	37	15	186,667	59,000	41,000	59,000	41,000	59,000	41,000			
1,1-Dichloroethylene	75354	7	7,143	46,667	46,667	15,000	950	15,000	950	15,000	950			
1,2-cis-Dichloroethylene	156592	70		~~1,867~~ 70	~~1,867~~ 70									
1,2-trans-Dichloroethylene	156605	100	10,127	18,667	18,667	68,000	3,900	68,000	3,900	68,000	3,900			
Dichloromethane	75092	5	~~2,222~~ 593	~~2,333~~ 190	~~5,600~~ 56,000	97,000	5,500	97,000	5,500	97,000	5,500			
2,4-Dichlorophenol	120832	21	59	2,800	2,800	1,000	88	1,000	88	1,000	88			
2,4-Dichlorophenoxyacetic acid (2,4-D)	94757	70		9,333	9,333									
1,2-Dichloropropane	78875	5	17,518	84,000	84,000	26,000	9,200	26,000	9,200	26,000	9,200			
1,3-Dichloropropene	542756	0.7	42	~~93~~ 420	28,000	3,000	1,100	3,000	1,100	3,000	1,100			
Dieldrin	60571	0.002	0.00005	~~0.3~~ 0.09	47	0.2	0.06	0.2	0.06	0.2	0.06	4	0.003	See (b)
Diethyl phthalate	84662	5,600	8,767	746,667	746,667	26,000	1,600	26,000	1,600	26,000	1,600			

Di (2-ethylhexyl) adipate	103231	400		~~3,889~~ 560,000	560,000									
Di (2-ethylhexyl) phthalate	117817	6	3	~~333~~ 100	18,667	400	360	400	360	400	360	3,100		
2,4-Dimethylphenol	105679	140	171	18,667	18,667	1,000	310	1,000	310	1,000	310	150,000		
Dimethyl phthalate	131113					17,000	1,000	17,000	1,000	17,000	1,000			
4,6-Dinitro-o-cresol	534521	~~0.6~~ 28	~~12~~ 582	~~75~~ 3,733	~~75~~ 3,733	310	24	310	24	310	24			
2,4-Dinitrophenol	51285	14	1,067	1,867	1,867	110	9.2	110	9.2	110	9.2			
2,4-Dinitrotoluene	121142	14	421	1,867	1,867	14,000	860	14,000	860	14,000	860			
2,6-Dinitrotoluene	606202	0.05		~~7~~ 2	~~280~~ 3,733									
Di-n-octyl phthalate	117840	~~70~~ 2,800		~~9,333~~ 373,333	~~9,333~~ 373,333									
Dinoseb	88857	7	~~12~~	933	933									
1,2-Diphenylhydrazine	122667	0.04	0.2	~~6~~ 1.8	~~6~~ 1.8	130	11	130	11	130	11			
Diquat	85007	20	~~176~~	2,053	2,053									
Endosulfan sulfate	1031078	42	18	5,600	5,600	0.2	0.06	0.2	0.06	0.2	0.06	3		
Endosulfan (Total)	115297	42	18	5,600	5,600	0.2	0.06	0.2	0.06	0.2	0.06	3		
Endothall	145733	100	~~16,000~~	18,667	18,667									
Endrin	72208	2	0.06	~~1,120~~ 280	~~1,120~~ 280	0.09	0.04	0.09	0.04	0.09	0.04	0.7	0.004	0.004
Endrin aldehyde	~~7421933~~ 7421934	~~2~~	~~0.06~~	~~1,120~~	~~1,120~~	0.09	0.04	0.09	0.04	0.09	0.04	0.7		
Ethylbenzene	100414	700	2,133	93,333	93,333	23,000	1,400	23,000	1,400	23,000	1,400			
Fluoranthene	206440	280	28	37,333	37,333	2,000	1,600	2,000	1,600	2,000	1,600			
Fluorene	86737	280	1,067	37,333	37,333									
Fluoride	7782414	4,000		140,000	140,000									
Glyphosate	1071836	700	266,667	93,333	93,333									
Guthion	86500	~~21~~	~~92~~	~~2,800~~	~~2,800~~		0.01		0.01		0.01			
Heptachlor	76448	0.4	0.00008	~~1~~ 0.4	467	0.5	0.004	0.5	0.004	0.6	0.01	0.9		
Heptachlor epoxide	1024573	0.2	0.00004	~~0.5~~ 0.2	12	0.5	0.004	0.5	0.004	0.6	0.01	0.9		
Hexachlorobenzene	118741	1	0.0003	~~3~~ 1	747	6	3.7	6	3.7	6	3.7			
Hexachlorobutadiene	87683	0.4	18	~~60~~ 18	187	45	8.2	45	8.2	45	8.2			
Hexachlorocyclohexane alpha	319846	0.006	0.005	~~0.7~~ 0.22	7,467	1,600	130	1,600	130	1,600	130	1,600		
Hexachlorocyclohexane beta	319857	0.02	0.02	~~3~~ 0.78	560	1,600	130	1,600	130	1,600	130	1,600		
Hexachlorocyclohexane delta	319868					1,600	130	1,600	130	1,600	130	1,600		
Hexachlorocyclohexane gamma (lindane)	58899	0.2	~~5~~ 1.8	~~700~~ 280	~~700~~ 280	1	0.08	1	0.28	1	0.61	11		
Hexachlorocyclopentadiene	77474	50	~~74~~ 580	~~11,200~~ 9,800	~~11,200~~ 9,800	3.5	0.3	3.5	0.3	3.5	0.3			
Hexachloroethane	67721	~~0.9~~ 2.5	~~1~~ 3.3	~~117~~ 100	~~653~~ 933	490	350	490	350	490	350	850		

Hydrogen sulfide	7783064						2 See (c)		2 See (c)		2 See (c)			
Indeno (1,2,3-cd) pyrene	193395	~~0.4~~ 0.05	~~1~~ 0.49	~~47~~ 1.9	~~47~~ 1.9									
Iron	7439896						1,000 D		1,000 D		1,000 D			
Isophorone	78591	37	961	~~4,912~~ 1,500	186,667	59,000	43,000	59,000	43,000	59,000	43,000			
Lead	~~7439971~~ 7439921	15 T		15 T	15 T	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	10,000 T	100 T
Malathion	121755	140	~~1,455~~	18,667	18,667		0.1		0.1		0.1			
Manganese	7439965	980		130,667	130,667								10,000	
Mercury	7439976	2 T		280 T	280 T	2.4 D	0.01 D	2.4 D	0.01 D	2.4 D	0.01 D	5 D		10 T
Methoxychlor	72435	40		~~18,667~~ 4,667	~~18,667~~ 4,667		0.03		0.03		0.03			
Methylmercury	22967926		0.3 mg/ kg											
Mirex	2385855	1	~~0.0002~~	~~0.26~~ 187	187		0.001		0.001		0.001			
Naphthalene	91203	140	1,524	18,667	18,667	1,100	210	3,200	580	3,200	580			
Nickel	7440020	~~210 T~~ 140 T	~~511 T~~ 4,600 T	28,000 T	28,000 T	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7		
Nitrate	14797558	10,000		3,733,333	3,733,333									
Nitrite	14797650	1,000		233,333	233,333									
Nitrate + Nitrite		10,000												
Nitrobenzene	98953	~~14~~ 3.5	~~554~~ 138	~~1,867~~ 467	~~1,867~~ 467	1,300	850	1,300	850	1,300	850			
p-Nitrophenol	100027					4,100	3,000	4,100	3,000	4,100	3,000			
~~Nitrosodibutylamine~~	~~924163~~	~~0.006~~	~~0.2~~	~~0.9~~										
~~Nitrosodiethylamine~~	~~55185~~	~~0.0002~~	~~0.1~~	~~0.03~~										
N-nitrosodimethylamine	62759	0.001	3	~~0.09~~ 0.03	~~0.09~~ 0.03									
N-Nitrosodiphenylamine	86306	7.1	6	~~952~~ 290	~~952~~ 290	2,900	200	2,900	200	2,900	200			
N-nitrosodi-n-propylamine	621647	0.005	0.5	~~0.7~~ 0.2	~~0.7~~ 88,667									
~~N-nitrosopyrrolidine~~	~~930552~~	~~0.02~~	~~34~~	~~2~~										
Nonylphenol	104405					28	6.6	28	6.6	28	6.6	28		
Oxamyl	23135220	200	~~6452~~	23,333	23,333									
Parathion	56382	~~42~~	~~16~~	~~5,600~~	~~5,600~~	0.07	0.01	0.07	0.01	0.07	0.01			
~~Pentachlorobenzene~~	~~608935~~	~~6~~		~~747~~	~~747~~									
Paraquat	1910425	32	~~12,000~~	4,200	4,200	100	54	100	54	100	54			
Pentachlorophenol	87865	1	~~111~~ 1,000	12	~~4,667~~ 28,000	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10		
Permethrin	52645531	350	~~77~~	46,667	46,667	0.3	0.2	0.3	0.2	0.3	0.2			
Phenanthrene	85018					30	6.3	30	6.3	30	6.3			
Phenol	108952	2,100	37	280,000	280,000	5,100	730	7,000	1,000	7,000	1,000	180,000		

Picloram	1918021	500	~~1,806~~ 2,710	65,333	65,333									
Polychlorinatedbiphenyls (PCBs)	1336363	0.5	0.00006	~~2~~ 19	19	2	0.01	2	0.02	2	0.02	11	0.001	0.001
Pyrene	129000	210	800	28,000	28,000									
Radium 226 + Radium 228		5 pCi/L												
Selenium	7782492	50 T	667 T	4,667 T	4,667 T		2 T		2 T		2 T	33 T	20 T	50 T
Silver	7440224	35 T	8,000 T	4,667 T	4,667 T	See (d) & Table 8		See (d) & Table 8		See (d) & Table 8		See (d) & Table 8		
Simazine	112349	4		4,667	4,667									
Strontium	7440246	8 pCi/L												
Styrene	100425	100		186,667	186,667	5,600	370	5,600	370	5,600	370			
Sulfides												100		
~~1,2,4,5-Tetrachlorobenzene~~	~~95943~~	~~2.1~~		~~280~~	~~280~~									
2,3,7,8-Tetrachlorod- ibenzo-p-dioxin (2,3,7,8-TCDD)	1746016	0.00003	~~0.0000001~~ 5x10-9	~~0.0007~~ 0.00003	~~0.0007~~ 0.0009	0.01	0.005	0.01	0.005	0.01	0.005	0.1		
1,1,2,2-Tetrachloroethane	79345	0.2	~~32,000~~ 4	~~23~~ 7	~~186,667~~ 56,000	4,700	3,200	4,700	3,200	4,700	3,200			
Tetrachloroethylene	127184	5	~~62~~ 261	~~2,222~~ 9,333	~~5,600~~ 9,333	2,600	280	6,500	680	6,500	680	15,000		
Thallium	7440280	2 T	~~0.07 T~~ 7.2 T	~~9 T~~ 75 T	~~9 T~~ 75 T	700 D	150 D	700 D	150 D	700 D	150 D			
Toluene	108883	1,000	~~11,963~~ 201,000	~~149,333~~ 280,000	~~149,333~~ 280,000	8,700	180	8,700	180	8,700	180			
Toxaphene	8001352	3	0.0003	~~4~~ 1.3	~~1,867~~ 933	0.7	0.0002	0.7	0.0002	0.7	0.0002	11	0.005	0.005
Tributyltin	~~688733~~		~~0.08~~	~~280~~	~~280~~	0.5	0.07	0.5	0.07	0.5	0.07			
1,2,4-Trichlorobenzene	120821	70	70	9,333	9,333	750	130	1,700	300	1,700	300			
1,1,1-Trichloroethane	71556	200	~~285,714~~ 428,571	1,866,667	1,866,667	2,600	1,600	2,600	1,600	2,600	1,600		1,000	
1,1,2-Trichloroethane	79005	5	16	~~82~~ 25	3,733	18,000	12,000	18,000	12,000	18,000	12,000			
Trichloroethylene	79016	5	~~8~~ 29	~~101~~ 280,000	~~467~~ 280	20,000	1,300	20,000	1,300	20,000	1,300			
~~2,4,5- Trichlorophenol~~	~~95954~~	~~700~~		~~93,333~~	~~93,333~~									
2,4,6-Trichlorophenol	88062	3.2	2	~~424~~ 130	~~424~~ 130	160	25	160	25	160	25	3,000		
2,4,5-Trichlorophenoxy proprionic acid (2,4,5-TP)	93721	50		~~29,867~~ 7,467	~~29,867~~ 7,467									
Trihalomethanes (T)		80												
Tritium	10028178	20,000 pCi/L												
Uranium	7440611	30 D		2,800	2,800									
Vinyl chloride	75014	2	5	~~6~~ 2	2,800									

Xylenes (T)	1330207	10,000		186,667	186,667									
Zinc	7440666	2,100 T	5,106 T	280,000 T	280,000 T	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	10,000 T	25,000 T
~~2-nitrophenol~~	~~88755~~		~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~
~~1,1-dichloroethane~~	~~85343~~		~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~
~~4-chlorophenyl phenyl ether~~	~~7005723~~		~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~
~~Benzo (ghi) perylene~~	~~191242~~		~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~	~~No Data~~

Footnotes

a. The asbestos standard is 7 million fibers (longer than 10 micrometers) per liter.

b. The aldrin/dieldrin standard is exceeded when the sum of the two compounds exceeds 0.003 µg/L.

c. In lakes, the acute criteria for hydrogen sulfide apply only to water samples taken from the epilimnion, or the upper layer of a lake or reservoir.

d. Hardness, expressed as mg/L $CaCO_3$, is determined according to the following criteria:

   i. If the receiving water body has an A&Wc or A&Ww designated use, then hardness is based on the hardness of the receiving water body from a sample taken at the same time that the sample for the metal is taken, except that the hardness may not exceed 400 mg/L $CaCO_3$.

   ii. If the receiving water has an A&Wedw or A&We designated use, then the hardness is based on the hardness of the effluent from a sample taken at the same time that the sample for the metal is taken, except that the hardness may not exceed 400 mg/L $CaCO_3$.

   iii. The mathematical equations for the hardness-dependent parameter represent the water quality standards. Examples of criteria for the hardness-dependent parameters have been calculated and are presented in separate tables at the end of Appendix A for the convenience of the user.

e. pH is determined according to the following criteria:

   i. If the receiving water has an A&Wc or A&Ww designated use, then pH is based on the pH of the receiving water body from a sample taken at the same time that the sample for pentachlorophenol or ammonia is taken.

   ii. If the receiving water body has an A&Wedw or A&We designated use, then the pH is based on the pH of the effluent from a sample taken at the same time that the sample for pentachlorophenol or ammonia is taken.

   iii. The mathematical equations for ammonia represent the water quality standards. Examples of criteria for ammonia have been calculated and are presented in separate tables at the end of Appendix A for the convenience of the user.

f. Table 1 abbreviations.

   i. µg/L = micrograms per liter,

   ii. mg/kg = milligrams per kilogram,

   iii. pCi/L = picocuries per liter,

   iv. D = dissolved,

   v. T = total recoverable,

   vi. TTHM indicates that the chemical is a trihalomethane.

g. The total trihalomethane (TTHM) standard is exceeded when the sum of these four compounds exceeds 80 µg/L, as a rolling annual average.

h. The concentration of gross alpha particle activity includes radium-226, but excludes radon and uranium.

i. The average annual concentration of beta particle activity and photon emitters from manmade radionuclides shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirems per year.

j. The mathematical equations for the pH-dependent parameters represent the water quality standards. Examples of criteria for the pH-dependent parameters have been calculated and are presented in separate tables at the end of Appendix A for the convenience of the user.

k. Abbreviations for the mathematical equations are as follows:
e = the base of the natural logarithm and is a mathematical constant equal to 2.71828
LN = is the natural logarithm
CMC = Criterion Maximum Concentration (acute)
CCC= Criterion Continuous Concentration (chronic)

Appendix B. Surface Waters and Designated Uses

(Coordinates are from the North American Datum of 1983 (NAD83). All latitudes in Arizona are north and all longitudes are west, but the negative signs are not included in the Appendix B table. Some web-based mapping systems require a negative sign before the longitude values to indicate it is a west longitude.)

Watersheds:

BW = Bill Williams
CG = Colorado – Grand Canyon
CL = Colorado – Lower Gila
LC = Little Colorado
MG = Middle Gila
SC = Santa Cruz – Rio Magdelena – Rio Sonoyta
SP = San Pedro – Willcox Playa – Rio Yaqui
SR = Salt River
UG = Upper Gila
VR = Verde River

Other Abbreviations:

WWTP = Wastewater Treatment Plant
Km = kilometers

Watershed	Surface	Segment Description and Location	Lake	Aquatic and Wildlife	Human Health	Agricultural

	Waters	(Latitude and Longitudes are in NAD 83)	Category	A&Wc	A&Ww	A&We	A&Wedw	FBC	PBC	DWS	FC	AgI	AgL
BW	Alamo Lake	34°14'06"/113°35'00"	Deep		A&Ww			FBC			FC		AgL
BW	Big Sandy River	Headwaters to Alamo Lake			A&Ww			FBC			FC		AgL
BW	Bill Williams River	Alamo Lake to confluence with Colorado River			A&Ww			FBC			FC		AgL
BW	Blue Tank	34°40'14"/112°58'17"			A&Ww			FBC			FC		AgL
BW	Boulder Creek	Headwaters to confluence with unnamed tributary at 34°41'13"/113°03'37"		A&Wc				FBC			FC		AgL
BW	Boulder Creek	Below confluence with unnamed tributary to confluence with Burro Creek			A&Ww			FBC			FC		AgL
BW	Burro Creek (OAW)	Headwaters to confluence with Boulder Creek			A&Ww			FBC			FC		AgL
BW	Burro Creek	Below confluence with Boulder Creek to confluence with Big Sandy River			A&Ww			FBC			FC		AgL
BW	Carter Tank	34°52'27"/112°57'31"			A&Ww			FBC			FC		AgL
BW	Conger Creek	Headwaters to confluence with unnamed tributary at 34°45'15"/113°05'46"		A&Wc				FBC			FC		AgL
BW	Conger Creek	Below confluence with unnamed tributary to confluence with Burro Creek			A&Ww			FBC			FC		AgL
BW	Copper Basin Wash	Headwaters to confluence with unnamed tributary at 34°28'12"/112°35'33"		A&Wc				FBC			FC		AgL
BW	Copper Basin Wash	Below confluence with unnamed tributary to confluence with Skull Valley Wash				A&We			PBC				AgL
BW	Cottonwood Canyon	Headwaters to Bear Trap Spring		A&Wc				FBC			FC		AgL
BW	Cottonwood Canyon	Below Bear Trap Spring to confluence at Sycamore Creek			A&Ww			FBC			FC		AgL
BW	Date Creek	Headwaters to confluence with Santa Maria River			A&Ww			FBC			FC		AgL
BW	Francis Creek (OAW)	Headwaters to confluence with Burro Creek			A&Ww			FBC		DWS	FC	AgI	AgL
BW	Kirkland Creek	Headwaters to confluence with Santa Maria River			A&Ww			FBC			FC	AgI	AgL
BW	Knight	Headwaters to confluence with Big Sandy			A&Ww			FBC			FC		AgL

	Creek	River											
BW	Peeples Canyon (OAW)	Headwaters to confluence with Santa Maria River			A&Ww			FBC			FC		AgL
BW	Red Lake	35°12'18"/113°03'57"	Sedimentary		A&Ww			FBC			FC		AgL
BW	Santa Maria River	Headwaters to Alamo Lake			A&Ww			FBC			FC	AgI	AgL
BW	Trout Creek	Headwaters to confluence with unnamed tributary at 35°06'47"/113°13'01"		A&Wc				FBC			FC		AgL
BW	Trout Creek	Below confluence with unnamed tributary to confluence with Knight Creek			A&Ww			FBC			FC		AgL
CG	Agate Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Beaver Dam Wash	Headwaters to confluence with the Virgin River			A&Ww			FBC			FC		AgL
CG	Big Springs Tank	36°36'08"/112°21'01"		A&Wc				FBC			FC		AgL
CG	Boucher Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Bright Angel Creek	Headwaters to confluence with Roaring Springs Creek		A&Wc				FBC			FC		
CG	Bright Angel Creek	Below Roaring Spring Springs Creek to confluence with Colorado River			A&Ww			FBC			FC		
CG	Bright Angel Wash	Headwaters to Grand Canyon National Park South Rim WWTP outfall at 36°02'59"/112°09'02"				A&We			PBC				
CG	Bright Angel Wash (EDW)	Grand Canyon National Park South Rim WWTP outfall to Coconino Wash					A&Wedw		PBC				AgL
CG	Bulrush Canyon Wash	Headwaters to confluence with Kanab Creek				A&We			PBC				
CG	Cataract Creek	Headwaters to Santa Fe Reservoir		A&Wc				FBC		DWS	FC	AgI	AgL
CG	Cataract Creek	Santa Fe Reservoir to City of Williams WWTP outfall at 35°14'40"/112°11'18"		A&Wc				FBC			FC	AgI	AgL

CG	Cataract Creek (EDW)	City of Williams WWTP outfall to 1 km downstream					A&Wedw		PBC				
CG	Cataract Creek	Red Lake Wash to Havasupai Indian Reservation boundary				A&We			PBC				AgL
CG	Cataract Lake	35°15'04"/112°12'58"	Igneous	A&Wc				FBC		DWS	FC		AgL
CG	Chuar Creek	Headwaters to confluence with unnamed tributary at 36°11'35"/111°52'20"		A&Wc				FBC			FC		
CG	Chuar Creek	Below unnamed tributary to confluence with the Colorado River			A&Ww			FBC			FC		
CG	City Reservoir	35°13'57"/112°11'25"	Igneous	A&Wc				FBC		DWS	FC		
CG	Clear Creek	Headwaters to confluence with unnamed tributary at 36°07'33"/112°00'03"		A&Wc				FBC			FC		
CG	Clear Creek	Below confluence with unnamed tributary to confluence with Colorado River			A&Ww			FBC			FC		
CG	Coconino Wash (EDW)	South Grand Canyon Sanitary District Tusayan WRF outfall at 35°58'39"/112°08'25" to 1 km downstream					A&Wedw		PBC				
CG	Colorado River	Lake Powell to Lake Mead		A&Wc				FBC		DWS	FC	AgI	AgL
~~CG~~	~~Cottonwood Creek~~	~~Headwaters to confluence with unnamed tributary at 35°20'46"/113°35'31"~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
~~CG~~	~~Cottonwood Creek~~	~~Below confluence with unnamed tributary to confluence with Colorado River~~			~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
CG	Crystal Creek	Headwaters to confluence with unnamed tributary at 36°13'41"/112°11'49"		A&Wc				FBC			FC		
CG	Crystal Creek	Below confluence with unnamed tributary to confluence with Colorado River			A&Ww			FBC			FC		
CG	Deer Creek	Headwaters to confluence with unnamed tributary at 36°26'15"/112°28'20"		A&Wc				FBC			FC		
CG	Deer Creek	Below confluence with unnamed tributary to confluence with Colorado River			A&Ww			FBC			FC		
CG	Detrital Wash	Headwaters to Lake Mead				A&We			PBC				

CG	Dogtown Reservoir	35°12'40"/112°07'54"	Igneous	A&Wc				FBC		DWS	FC	AgI	AgL
CG	Dragon Creek	Headwaters to confluence with Milk Creek		A&Wc				FBC			FC		
CG	Dragon Creek	Below confluence with Milk Creek to confluence with Crystal Creek			A&Ww			FBC			FC		
CG	Garden Creek	Headwaters to confluence with Pipe Creek			A&Ww			FBC			FC		
CG	Gonzalez Lake	35°15'26"/112°12'09"	Shallow		A&Ww			FBC			FC	AgI	AgL
CG	Grand Wash	Headwaters to Colorado River				A&We			PBC				
CG	Grapevine Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Grapevine Wash	Headwaters to Colorado River				A&We			PBC				
CG	Hakatai Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Hance Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Havasu Creek	From the Havasupai Indian Reservation boundary to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Hermit Creek	Headwaters to Hermit Pack Trail crossing at 36°03'38"/112°14'00"		A&Wc				FBC			FC		
CG	Hermit Creek	Below Hermit Pack Trail crossing to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Horn Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Hualapai Wash	Headwaters to Lake Mead				A&We			PBC				
CG	Jacob Lake	36°42'27"/112°13'50"	Sedimentary	A&Wc				FBC			FC		
CG	Kaibab Lake	35°17'04"/112°09'32"	Igneous	A&Wc				FBC		DWS	FC	AgI	AgL
CG	Kanab Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC		DWS	FC		AgL
CG	Kwagunt Creek	Headwaters to confluence with unnamed tributary at 36°13'37"/111°54'50"		A&Wc				FBC			FC		

CG	Kwagunt Creek	Below confluence with unnamed tributary to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Lake Mead	36°06'18"/114°26'33"	Deep	A&Wc				FBC		DWS	FC	AgI	AgL
CG	Lake Powell	36°59'53"/111°08'17"	Deep	A&Wc				FBC		DWS	FC	AgI	AgL
CG	Lonetree Canyon Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Matkatamiba Creek	Below Havasupai Indian Reservation boundary to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Monument Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Nankoweap Creek	Headwaters to confluence with unnamed tributary at 36°15'29"/111°57'26"		A&Wc				FBC			FC		
CG	Nankoweap Creek	Below confluence with unnamed tributary to confluence with Colorado River			A&Ww			FBC			FC		
CG	National Canyon Creek	Headwaters to Hualapai Indian Reservation boundary at 36°15'15"/112°52'34"			A&Ww			FBC			FC		
CG	North Canyon Creek	Headwaters to confluence with unnamed tributary at 36°33'58"/111°55'41"		A&Wc				FBC			FC		
CG	North Canyon Creek	Below confluence with unnamed tributary to confluence with Colorado River			A&Ww			FBC			FC		
CG	Olo Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Parashant Canyon	Headwaters to confluence with unnamed tributary at 36°21'02"/113°27'56"		A&Wc				FBC			FC		
CG	Parashant Canyon	Below confluence with unnamed tributary to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Paria River	Utah border to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Phantom Creek	Headwaters to confluence with unnamed tributary at 36°09'29"/112°08'13"		A&Wc				FBC			FC		
CG	Phantom	Below confluence with unnamed tributary			A&Ww			FBC			FC		

	Creek	to confluence with Bright Angel Creek											
CG	Pipe Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Red Canyon Creek	Headwaters to confluence with the Colorado River '			A&Ww			FBC			FC		
~~CG~~	~~Red Lake~~	~~35°40'03"/114°04'07"~~			~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
CG	Roaring Springs	36°11'45"/112°02'06"		A&Wc				FBC		DWS	FC		
CG	Roaring Springs Creek	Headwaters to confluence with Bright Angel Creek		A&Wc				FBC			FC		
~~CG~~	~~Rock Canyon~~	~~Headwaters to confluence with Truxton Wash~~				~~A&We~~			~~PBC~~				
CG	Royal Arch Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Ruby Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Russell Tank	35°52'21"/111°52'45"		A&Wc				FBC			FC		AgL
CG	Saddle Canyon Creek	Headwaters to confluence with unnamed tributary at 36°21'36"/112°22'43"		A&Wc				FBC			FC		
CG	Saddle Canyon Creek	Below confluence with unnamed tributary to confluence with Colorado River			A&Ww			FBC			FC		
CG	Santa Fe Reservoir	35°14'31"/112°11'10"	Igneous	A&Wc				FBC		DWS	FC		
CG	Sapphire Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Serpentine Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Shinumo Creek	Headwaters to confluence with unnamed tributary at 36°18'18"/112°18'07"		A&Wc				FBC			FC		
CG	Shinumo Creek	Below confluence with unnamed tributary to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Short Creek	Headwaters to confluence with Fort Pearce Wash				A&We			PBC				

CG	Slate Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Spring Canyon Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Stone Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Tapeats Creek	Headwaters to confluence with the Colorado River		A&Wc				FBC			FC		
CG	Thunder River	Headwaters to confluence with Tapeats Creek		A&Wc				FBC			FC		
CG	Trail Canyon Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Transept Canyon	Headwaters to Grand Canyon National Park North Rim WWTP outfall at 36°12'20"/112°03'35"				A&We			PBC				
CG	Transept Canyon (EDW)	Grand Canyon National Park North Rim WWTP outfall to 1 km downstream					A&Wedw		PBC				
CG	Transept Canyon	From 1 km downstream of the Grand Canyon National Park North Rim WWTP outfall to confluence with Bright Angel Creek				A&We			PBC				
CG	Travertine Canyon Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
~~CG~~	~~Truxton Wash~~	~~Headwaters to Red Lake~~				~~A&We~~			~~PBC~~				
CG	Turquoise Canyon	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Unkar Creek	Below confluence with unnamed tributary at 36°07'54"/111°54'06" to confluence with Colorado River			A&Ww			FBC			FC		
CG	Unnamed Wash (EDW)	Grand Canyon National Park Desert View WWTP outfall at 36°02'06"/111°49'13" to confluence with Cedar Canyon					A&Wedw		PBC				
	Unnamed	Valle Airpark WRF outfall at											

CG	Wash (EDW)	35°38'34"/112°09'22" to confluence with Spring Valley Wash					A&Wedw		PBC				
CG	Vasey's Paradise	A spring at 36°29'52"/111°51'26"		A&Wc				FBC			FC		
CG	Virgin River	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC	AgI	AgL
CG	Vishnu Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	Warm Springs Creek	Headwaters to confluence with the Colorado River			A&Ww			FBC			FC		
CG	West Cataract Creek	Headwaters to confluence with Cataract Creek		A&Wc				FBC			FC		AgL
CG	White Creek	Headwaters to confluence with unnamed tributary at 36°18'45"/112°21'03"		A&Wc				FBC			FC		
CG	White Creek	Below confluence with unnamed tributary to confluence with the Colorado River			A&Ww			FBC			FC		
~~CG~~	~~Wright Canyon Creek~~	~~Headwaters to confluence with unnamed tributary at 35°20'48"/113°30'40"~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
~~CG~~	~~Wright Canyon Creek~~	~~Below confluence with unnamed tributary to confluence with Truxton Wash~~			~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
CL	A10 Backwater	33°31'45"/114°33'19"	Shallow		A&Ww			FBC			FC		
CL	A7 Backwater	33°34'27"/114°32'04"	Shallow		A&Ww			FBC			FC		
CL	Adobe Lake	33°02'36"/114°39'26"	Shallow		A&Ww			FBC			FC		
CL	Cibola Lake	33°14'01"/114°40'31"	Shallow		A&Ww			FBC			FC		
CL	Clear Lake	33°01'59"/114°31'19"	Shallow		A&Ww			FBC			FC		
CL	Columbus Wash	Headwaters to confluence with the Gila River				A&We			PBC				
CL	Colorado River	Lake Mead to Topock Marsh		A&Wc				FBC		DWS	FC	AgI	AgL
CL	Colorado	Topock Marsh to Morelos Dam			A&Ww			FBC		DWS	FC	AgI	AgL

	River												
CL	Gila River	Painted Rock Dam to confluence with the Colorado River			A&Ww			FBC			FC	AgI	AgL
CL	Holy Moses Wash	Headwaters to City of Kingman Downtown WWTP outfall at 35°10'33"/114°03'46"				A&We			PBC				
CL	Holy Moses Wash (EDW)	City of Kingman Downtown WWTP outfall to 3 km downstream					A&Wedw		PBC				
CL	Holy Moses Wash	From 3 km downstream of City of Kingman Downtown WWTP outfall to confluence with Sawmill Wash				A&We			PBC				
CL	Hunter's Hole Backwater	32°31'13"/114°48'07"	Shallow		A&Ww			FBC			FC		AgL
CL	Imperial Reservoir	32°53'02"/114°27'54"	Shallow		A&Ww			FBC		DWS	FC	AgI	AgL
CL	Island Lake	33°01'44"/114°36'42"	Shallow		A&Ww			FBC			FC		
CL	Laguna Reservoir	32°51'35"/114°28'29"	Shallow		A&Ww			FBC		DWS	FC	AgI	AgL
CL	Lake Havasu	34°35'18"/114°25'47"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
CL	Lake Mohave	35°26'58"/114°38'30"	Deep	A&Wc				FBC		DWS	FC	AgI	AgL
CL	Martinez Lake	32°58'49"/114°28'09"	Shallow		A&Ww			FBC			FC	AgI	AgL
CL	Mittry Lake	32°49'17"/114°27'54"	Shallow		A&Ww			FBC			FC		
CL	Mohave Wash	Headwaters to Lower Colorado River				A&We			PBC				
CL	Nortons Lake	33°02'30"/114°37'59"	Shallow		A&Ww			FBC			FC		
CL	Painted Rock (Borrow Pit) Lake	33°04'55"/113°01'17"	Sedimentary		A&Ww			FBC			FC	AgI	AgL
CL	Pretty Water Lake	33°19'51"/114°42'19"	Shallow		A&Ww			FBC			FC		
CL	Quigley Pond	32°43'40"/113°57'44"	Shallow		A&Ww			FBC			FC		

CL	Redondo Lake	32°44'32"/114°29'03"	Shallow		A&Ww			FBC			FC		
CL	Sacramento Wash	Headwaters to Topock Marsh				A&We			PBC				
CL	Sawmill Canyon	Headwaters to abandoned gaging station at 35°09'45"/113°57'56"			A&Ww			FBC			FC		AgL
CL	Sawmill Canyon	Below abandoned gaging station to confluence with Holy Moses Wash				A&We			PBC				AgL
CL	Topock Marsh	34°43'27"/114°28'59"	Shallow		A&Ww			FBC		DWS	FC	AgI	AgL
CL	Tyson Wash (EDW)	Town of Quartzsite WWTP outfall at 33°42'39"/ 114°13'10" to 1 km downstream					A&Wedw		PBC				
CL	Wellton Canal	Wellton-Mohawk Irrigation District								DWS		AgI	AgL
~~CL~~	~~Wellton Ponds~~	~~32°40'32"/114°00'26"~~			~~A&Ww~~			~~FBC~~			~~FC~~		
~~CL~~	~~Yuma Proving Ground Pond~~	~~32°50'58"/114°26'14"~~			~~A&Ww~~			~~FBC~~			~~FC~~		
CL	Yuma Area Canals	Above municipal water treatment plant intakes								DWS		AgI	AgL
CL	Yuma Area Canals	Below municipal water treatment plant intakes and all drains										AgI	AgL
LC	Als Lake	35°02'10"/111°25'17"	Igneous		A&Ww			FBC			FC		AgL
LC	Ashurst Lake	35°01'06"/111°24'18"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Atcheson Reservoir	33°59'59"/109°20'43"	Igneous		A&Ww			FBC			FC	AgI	AgL
LC	Auger Creek	Headwaters to confluence with Nutrioso Creek		A&Wc				FBC			FC		AgL
LC	Barbershop Canyon Creek	Headwaters to confluence with East Clear Creek		A&Wc				FBC			FC		AgL
LC	Bear Canyon Creek	Headwaters to confluence with General Springs Canyon		A&Wc				FBC			FC		AgL

LC	Bear Canyon Creek	Headwaters to confluence with Willow Creek		A&Wc				FBC			FC		AgL
LC	Bear Canyon Lake	34°24'00"/111°00'06"	Sedimentary	A&Wc				FBC			FC	AgI	AgL
LC	Becker Lake	34°09'11"/109°18'23"	Shallow	A&Wc				FBC			FC		AgL
LC	Billy Creek	Headwaters to confluence with Show Low Creek		A&Wc				FBC			FC		AgL
LC	Black Canyon	Headwaters to confluence with Chevelon Creek		A&Wc				FBC			FC	AgI	AgL
LC	Black Canyon Lake	34°20'32"/110°40'13"	Sedimentary	A&Wc				FBC		DWS	FC	AgI	AgL
~~LC~~	~~Boot Lake~~	~~34°58'54"/111°20'11"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
LC	Bow and Arrow Wash	Headwaters to confluence with Rio de Flag				A&We			PBC				
LC	Buck Springs Canyon Creek	Headwaters to confluence with Leonard Canyon Creek		A&Wc				FBC			FC		AgL
LC	Bunch Reservoir	34°02'20"/109°26'48"	Igneous	A&Wc				FBC			FC	AgI	AgL
~~LC~~	~~Camillo Tank~~	~~34°55'03"/111°22'40"~~	~~Igneous~~		~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
LC	Carnero Lake	34°06'57"/109°31'42"	Shallow	A&Wc				FBC			FC		AgL
LC	Chevelon Canyon Lake	34°29'18"/110°49'30"	Sedimentary	A&Wc				FBC			FC	AgI	AgL
LC	Chevelon Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
LC	Chevelon Creek, West Fork	Headwaters to confluence with Chevelon Creek		A&Wc				FBC			FC		AgL
LC	Chilson Tank	34°51'43"/111°22'54"	Igneous		A&Ww			FBC			FC		AgL
LC	Clear Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC		DWS	FC		AgL
LC	Clear Creek Reservoir	34°57'09"/110°39'14"	Shallow	A&Wc				FBC		DWS	FC	AgI	AgL

LC	Coconino Reservoir	35°00'05"/111°24'10"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Colter Creek	Headwaters to confluence with Nutrioso Creek		A&Wc				FBC			FC		AgL
LC	Colter Reservoir	33°56'39"/109°28'53"	Shallow	A&Wc				FBC			FC		AgL
LC	Concho Creek	Headwaters to confluence with Carrizo Wash		A&Wc				FBC			FC		AgL
LC	Concho Lake	34°26'37"/109°37'40"	Shallow	A&Wc				FBC			FC	AgI	AgL
LC	Cow Lake	34°53'14"/111°18'51"	Igneous		A&Ww			FBC			FC		AgL
LC	Coyote Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
LC	Cragin Reservoir (formerly Blue Ridge Reservoir)	34°32'40"/111°11'33"	Deep	A&Wc				FBC			FC	AgI	AgL
LC	Crisis Lake (Snake Tank #2)	34°47'51"/111°17'32"			A&Ww			FBC			FC		AgL
LC	Dane Canyon Creek	Headwaters to confluence with Barbershop Canyon Creek		A&Wc				FBC			FC		AgL
LC	Daves Tank	34°44'22"/111°17'15"			A&Ww			FBC			FC		AgL
LC	Deep Lake	35°03'34"/111°25'00"	Igneous		A&Ww			FBC			FC		AgL
~~LC~~	~~Dry Lake (EDW)~~	~~34°38'02"/110°23'40"~~	~~EDW~~				~~A&Wedw~~		~~PBC~~				
LC	Ducksnest Lake	34°59'14"/111°23'57"			A&Ww			FBC			FC		AgL
LC	East Clear Creek	Headwaters to confluence with Clear Creek		A&Wc				FBC			FC	AgI	AgL
LC	Ellis Wiltbank Reservoir	34°05'25"/109°28'25"	Igneous		A&Ww			FBC			FC	AgI	AgL
LC	Estates at Pine Canyon	35°09'32"/111°38'26"	EDW				A&Wedw		PBC				

	lakes (EDW)												
LC	Fish Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC		AgL
LC	Fool's Hollow Lake	34°16'30"/110°03'43"	Igneous	A&Wc				FBC			FC		AgL
LC	General Springs Canyon Creek	Headwaters to confluence with East Clear Creek		A&Wc				FBC			FC		AgL
LC	Geneva Reservoir	34°01'45"/109°31'46"	Igneous		A&Ww			FBC			FC		AgL
LC	Hall Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
LC	Hart Canyon Creek	Headwaters to confluence with Willow Creek		A&Wc				FBC			FC		AgL
LC	Hay Lake	34°00'11"/109°25'57"	Igneous	A&Wc				FBC			FC		AgL
LC	Hog Wallow Lake	33°58'57"/109°25'39"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Horse Lake	35°03'55"/111°27'50"			A&Ww			FBC			FC		AgL
LC	Hulsey Creek	Headwaters to confluence with Nutrioso Creek		A&Wc				FBC			FC		AgL
LC	Hulsey Lake	33°55'58"/109°09'40"	Sedimentary	A&Wc				FBC			FC		AgL
LC	Indian Lake	35°00'39"/111°22'41"			A&Ww			FBC			FC		AgL
LC	Jacks Canyon Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
LC	Jarvis Lake	33°58'59"/109°12'36"	Sedimentary		A&Ww			FBC			FC		AgL
LC	Kinnikinick Lake	34°53'53"/111°18'18"	Igneous	A&Wc				FBC			FC		AgL
LC	Knoll Lake	34°25'38"/111°05'13"	Sedimentary	A&Wc				FBC			FC		AgL
LC	Lake Humphreys (EDW)	35°11'51"/111°35'19"	EDW				A&Wedw		PBC				
LC	Lake Mary, Lower	35°06'21"/111°34'38"	Igneous	A&Wc				FBC		DWS	FC		AgL
LC	Lake Mary,	35°03'23"/111°28'34"	Igneous	A&Wc				FBC		DWS	FC		AgL

	Upper												
LC	Lake of the Woods	34°09'40"/109°58'47"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Lee Valley Creek (OAW)	Headwaters to Lee Valley Reservoir		A&Wc				FBC			FC		
LC	Lee Valley Creek	From Lee Valley Reservoir to confluence with the East Fork of the Little Colorado River		A&Wc				FBC			FC		AgL
LC	Lee Valley Reservoir	33°56'29"/109°30'04"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Leonard Canyon Creek	Headwaters to confluence with Clear Creek		A&Wc				FBC			FC		AgL
LC	Leonard Canyon Creek, East Fork	Headwaters to confluence with Leonard Canyon Creek		A&Wc				FBC			FC		AgL
LC	Leonard Canyon Creek, Middle Fork	Headwaters to confluence with Leonard Canyon, West Fork		A&Wc				FBC			FC		AgL
LC	Leonard Canyon Creek, West Fork	Headwaters to confluence with Leonard Canyon, East Fork		A&Wc				FBC			FC		AgL
LC	Lily Creek	Headwaters to confluence with Coyote Creek		A&Wc				FBC			FC		AgL
LC	Little Colorado River	Headwaters to Lyman Reservoir		A&Wc				FBC			FC	AgI	AgL
LC	Little Colorado River	Below Lyman Reservoir to confluence with the Puerco River		A&Wc				FBC		DWS	FC	AgI	AgL
LC	Little Colorado River	Below Puerco River confluence to the Colorado River, excluding segments on Native American Lands			A&Ww			FBC		DWS	FC	AgI	AgL

LC	Little Colorado River, East Fork	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC		AgL
LC	Little Colorado River, South Fork	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC		AgL
LC	Little Colorado River, West Fork (OAW)	Headwaters to Government Springs		A&Wc				FBC			FC		
LC	Little Colorado River, West Fork	Below Government Springs to confluence with the Little Colorado River		A&Wc				FBC			FC		AgL
LC	Little George Reservoir	34°00'37"/109°19'15"	Igneous		A&Ww			FBC			FC	AgI	
LC	Little Mormon Lake	34°17'00"/109°58'06"	Igneous		A&Ww			FBC			FC	AgI	AgL
~~LC~~	~~Little Ortega Lake~~	~~34°22'47"/109°40'06"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~		
LC	Long Lake, Lower	34°47'16"/111°12'40"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Long Lake, Upper	35°00'08"/111°21'23"	Igneous	A&Wc				FBC			FC		AgL
LC	Long Tom Tank	34°20'35"/110°49'22"		A&Wc				FBC			FC		AgL
LC	Lower Walnut Canyon Lake (EDW)	35°12'04"/111°34'07"	EDW				A&Wedw		PBC				
LC	Lyman Reservoir	34°21'21"/109°21'35"	Deep	A&Wc				FBC			FC	AgI	AgL
LC	Mamie Creek	Headwaters to confluence with Coyote Creek		A&Wc				FBC			FC		AgL

LC	Marshall Lake	35°07'18"/111°32'07"	Igneous	A&Wc				FBC			FC		AgL
LC	McKay Reservoir	34°01'27"/109°13'48"		A&Wc				FBC			FC	AgI	AgL
LC	Merritt Draw Creek	Headwaters to confluence with Barbershop Canyon Creek		A&Wc				FBC			FC		AgL
LC	Mexican Hay Lake	34°01'58"/109°21'25"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Milk Creek	Headwaters to confluence with Hulsey Creek		A&Wc				FBC			FC		AgL
LC	Miller Canyon Creek	Headwaters to confluence with East Clear Creek		A&Wc				FBC			FC		AgL
LC	Miller Canyon Creek, East Fork	Headwaters to confluence with Miller Canyon Creek		A&Wc				FBC			FC		AgL
~~LC~~	~~Mineral Creek~~	~~Headwaters to Little Ortega Lake~~		~~A&Wc~~				~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
~~LC~~	~~Mormon Lake~~	~~34°56'38"/111°27'25"~~	~~Shallow~~	~~A&Wc~~				~~FBC~~		~~DWS~~	~~FC~~	~~AgI~~	~~AgL~~
LC	Morton Lake	34°53'37"/111°17'41"	Igneous	A&Wc				FBC			FC		AgL
LC	Mud Lake	34°55'19"/111°21'29"	Shallow		A&Ww			FBC			FC		AgL
LC	Ned Lake (EDW)	34°17'17"/110°03'22"	EDW				A&Wedw		PBC				
LC	Nelson Reservoir	34°02'52"/109°11'19"	Sedimentary	A&Wc				FBC			FC	AgI	AgL
LC	Norton Reservoir	34°03'57"/109°31'27"	Igneous		A&Ww			FBC			FC		AgL
LC	Nutrioso Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
LC	Paddy Creek	Headwaters to confluence with Nutrioso Creek		A&Wc				FBC			FC		AgL
~~LC~~	~~Phoenix Park Wash~~	~~Headwaters to Dry Lake~~				~~A&We~~			~~PBC~~				
LC	Pierce Seep	34°23'39"/110°31'17"		A&Wc					PBC				

LC	Pine Tank	34°46'49"/111°17'21"	Igneous		A&Ww			FBC			FC		AgL
LC	Pintail Lake (EDW)	34°18'05"/110°01'21"	EDW				A&Wedw		PBC				
LC	Porter Creek	Headwaters to confluence with Show Low Creek		A&Wc				FBC			FC		AgL
~~LC~~	~~Potato Lake~~	~~35°03'15"/111°24'13"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
~~LC~~	~~Pratt Lake~~	~~34°01'32"/109°04'18"~~	~~Sedimentary~~	~~A&Wc~~				~~FBC~~			~~FC~~		
LC	Puerco River	Headwaters to confluence with the Little Colorado River			A&Ww			FBC		DWS	FC	AgI	AgL
LC	Puerco River (EDW)	Sanders Unified School District WWTP outfall at 35°12'52"/109°19'40" to 0.5 km downstream					A&Wedw		PBC				
LC	Rainbow Lake	34°09'00"/109°59'09"	Shallow Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Reagan Reservoir	34°02'09"/109°08'41"	Igneous		A&Ww			FBC			FC		AgL
LC	Rio de Flag	Headwaters to City of Flagstaff WWTP outfall at 35°12'21"/111°39'17"				A&We			PBC				
LC	Rio de Flag (EDW)	From City of Flagstaff WWTP outfall to the confluence with San Francisco Wash					A&Wedw		PBC				
LC	River Reservoir	34°02'01"/109°26'07"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Rogers Reservoir	33°56'30"/109°16'20"	Igneous		A&Ww			FBC			FC		AgL
LC	Rudd Creek	Headwaters to confluence with Nutrioso Creek		A&Wc				FBC			FC		AgL
LC	Russel Reservoir	33°59'29"/109°20'01"	Igneous		A&Ww			FBC			FC	AgI	AgL
LC	San Salvador Reservoir	33°58'51"/109°19'55"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Scott Reservoir	34°10'31"/109°57'31"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Show Low Creek	Headwaters to confluence with Silver Creek		A&Wc				FBC			FC	AgI	AgL

LC	Show Low Lake	34°11'36"/110°00'12"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Silver Creek	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
LC	Slade Reservoir	33°59'41"/109°20'26"	Igneous		A&Ww			FBC			FC	AgI	AgL
LC	Soldiers Annex Lake	34°47'15"/111°13'51"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Soldiers Lake	34°47'47"/111°14'04"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Spaulding Tank	34°30'17"/111°02'06"			A&Ww			FBC			FC		AgL
~~LC~~	~~Sponseller Lake~~	~~34°14'09"/109°50'45"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
LC	St Johns Reservoir (Little Reservoir)	34°29'10"/109°22'06"	Igneous		A&Ww			FBC			FC	AgI	AgL
LC	Telephone Lake (EDW)	34°17'35"/110°02'42"	EDW				A&Wedw		PBC				
LC	Tremaine Lake	34°46'02"/111°13'51"	Igneous	A&Wc				FBC			FC		AgL
LC	Tunnel Reservoir	34°01'53"/109°26'34"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Turkey Draw (EDW)	High Country Pines II WWTP outfall at 33°25'35"/ 110°38'13" to confluence with Black Canyon Creek					A&Wedw		PBC				
LC	Unnamed Wash (EDW)	Bison Ranch WWTP outfall at 34°23'31"/110°31'29" to Pierce Seep					A&Wedw		PBC				
~~LC~~	~~Unnamed Wash (EDW)~~	~~Black Mesa Ranger Station WWTP outfall at 34°23'35"/110°33'36" to confluence of Oklahoma Flat Draw~~					~~A&Wedw~~		~~PBC~~				
~~LC~~	~~Vail Lake~~	~~35°05'23"/111°30'46"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
LC	Walnut Creek	Headwaters to confluence with Billy Creek		A&Wc				FBC			FC		AgL
LC	Water	Headwaters to confluence with the Little		A&Wc				FBC			FC		AgL

	Canyon Creek	Colorado River											
~~LC~~	~~Water Canyon Reservoir~~	~~34°00'16"/109°20'05"~~	~~Igneous~~		~~A&Ww~~			~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
LC	Whale Lake (EDW)	35°11'13"/111°35'21"	EDW				A&Wedw		PBC				
LC	Whipple Lake	'34°16'49"/109°58'29"	Igneous		A&Ww			FBC			FC		AgL
LC	White Mountain Lake	34°21'57"/109°59'21"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	White Mountain Reservoir	34°00'12"/109°30'39"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Willow Creek	Headwaters to confluence with Clear Creek		A&Wc				FBC			FC		AgL
LC	Willow Springs Canyon Creek	Headwaters to confluence with Chevelon Creek		A&Wc				FBC			FC		AgL
LC	Willow Springs Lake	34°18'13"/110°52'16"	Sedimentary	A&Wc				FBC			FC	AgI	AgL
LC	Woodland Reservoir	34°07'35"/109°57'01"	Igneous	A&Wc				FBC			FC	AgI	AgL
LC	Woods Canyon Creek	Headwaters to confluence with Chevelon Creek		A&Wc				FBC			FC		AgL
LC	Woods Canyon Lake	34°20'09"/110°56'45"	Sedimentary	A&Wc				FBC			FC	AgI	AgL
LC	Zuni River	Headwaters to confluence with the Little Colorado River		A&Wc				FBC			FC	AgI	AgL
MG	Agua Fria River	Headwaters to confluence with unnamed tributary at 34°35'14"/112°16'18"				A&We			PBC				AgL

MG	Agua Fria River (EDW)	Below confluence with unnamed tributary to State Route 169					A&Wedw		PBC				AgL
MG	Agua Fria River	From State Route 169 to Lake Pleasant			A&Ww			FBC		DWS	FC	AgI	AgL
MG	Agua Fria River	Below Lake Pleasant to the City of El Mirage WWTP at ' 33°34'20"/112°18'32"				A&We			PBC				AgL
MG	Agua Fria River (EDW)	From City of El Mirage WWTP outfall to 2 km downstream					A&Wedw		PBC				
MG	Agua Fria River	Below 2 km downstream of the City of El Mirage WWTP to City of Avondale WWTP outfall at 33°23'55"/112°21'16"				A&We			PBC				
MG	Agua Fria River	From City of Avondale WWTP outfall to confluence with Gila River					A&Wedw		PBC				
~~MG~~	~~Alvord Park Lake~~	~~35th Avenue & Baseline Road, Phoenix at 33°22'23"/ 112°08'20"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	Andorra Wash	Headwaters to confluence with Cave Creek Wash				A&We			PBC				
MG	Antelope Creek	Headwaters to confluence with Martinez ~~Wash~~ Creek			A&Ww			FBC			FC		AgL
MG	Arlington Canal	From Gila River at 33°20'54"/112°35'39" to Gila River at 33°13'44"/112°46'15"											AgL
MG	Ash Creek	Headwaters to confluence with Tex Canyon		A&Wc				FBC			FC	AgI	AgL
MG	Ash Creek	Below confluence with Tex Canyon to confluence with Agua Fria River			A&Ww			FBC			FC	AgI	AgL
MG	Beehive Tank	32°52'37"/111°02'20"			A&Ww			FBC			FC		AgL
MG	Big Bug Creek	Headwaters to confluence with Eugene Gulch		A&Wc				FBC			FC	AgI	AgL
MG	Big Bug Creek	Below confluence with Eugene Gulch to confluence with Agua Fria River			A&Ww			FBC			FC	AgI	AgL
MG	Black Canyon Creek	Headwaters to confluence with the Agua Fria River			A&Ww			FBC			FC		AgL

MG	Blind Indian Creek	Headwaters to confluence with the Hassayampa River			A&Ww			FBC			FC		AgL
~~MG~~	~~Bonsall Park Lake~~	~~59th Avenue & Bethany Home Road, Phoenix at 33°31'24"/112°11'08"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
~~MG~~	~~Canal Park Lake~~	~~College Avenue & Curry Road, Tempe at 33°26'54"/ 111°56'19"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	Cave Creek	Headwaters to the Cave Creek Dam			A&Ww			FBC			FC		AgL
MG	Cave Creek	Cave Creek Dam to the Arizona Canal				A&We			PBC				
MG	Centennial Wash	Headwaters to confluence with the Gila River at 33°16'32"/112°48'08"				A&We			PBC				AgL
MG	Centennial Wash Ponds	33°54'52"/113°23'47"			A&Ww			FBC			FC		AgL
MG	Chaparral Park Lake	Hayden Road & Chaparral Road, Scottsdale at 33°30'40"/111°54'27"	Urban		A&Ww				PBC		FC	AgI	
~~MG~~	~~Cortez Park Lake~~	~~35th Avenue & Dunlap, Glendale at 33°34'13"/ 112°07'52"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~	~~AgI~~	
~~MG~~	~~Desert Breeze Lake~~	~~Galaxy Drive, West Chandler at 33°18'47"/ 111°55'10"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	Devils Canyon	Headwaters to confluence with Mineral Creek			A&Ww				FBC		FC		AgL
~~MG~~	~~Dobson Lake~~	~~Dobson Road & Los Lagos Vista Avenue, Mesa at 33°22'48"/111°52'35"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	East Maricopa Floodway	From Brown and Greenfield Rds to the Gila River Indian Reservation Boundary			A&We				PBS				AgL
MG	Eldorado Park Lake	Miller Road & Oak Street, Tempe at 33°28'25"/ 111°54'53"	Urban		A&Ww				PBC		FC		
~~MG~~	~~Encanto Park Lake~~	~~15th Avenue & Encanto Blvd., Phoenix at 33°28'28"/ 112°05'18"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~	~~AgI~~	
MG	Fain Lake	Town of Prescott Valley Park Lake 34°34'29"/ 112°21'06"	Urban		A&Ww				PBC		FC		
MG	French Gulch	Headwaters to confluence with Hassayampa River			A&Ww				PBC				AgL
MG	Galena Gulch	Headwaters to confluence with the Agua Fria River				A&We			PBC				AgL
	Galloway Wash (EDW)	Town of Cave Creek WWTP outfall at 33°50'15"/ 111°57'35" to confluence with											

MG		Cave Creek					A&Wedw		PBC				
MG	Gila River	San Carlos Indian Reservation boundary to the Ashurst-Hayden Dam			A&Ww			FBC			FC	AgI	AgL
MG	Gila River	Ashurst-Hayden Dam to the Town of Florence WWTP outfall at 33°02'20"/111°24'19"				A&We			PBC				AgL
MG	Gila River (EDW)	Town of Florence WWTP outfall to Felix Road					A&Wedw		PBC				
MG	Gila River	Felix Road to the Gila River Indian Reservation boundary				A&We			PBC				AgL
MG	Gila River (EDW)	From the confluence with the Salt River to Gillespie Dam					A&Wedw		PBC		FC	AgI	AgL
MG	Gila River	Gillespie Dam to confluence with Painted Rock Dam			A&Ww			FBC			FC	AgI	AgL
~~MG~~	~~Granada Park Lake~~	~~6505 North 20th Street, Phoenix at 33°31'56"/ 112°02'16"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	Groom Creek	Headwaters to confluence with the Hassayampa River		A&Wc				FBC		DWS	FC		AgL
MG	Hassayampa Lake	34°25'45"/112°25'33"	Igneous	A&Wc				FBC		DWS	FC		
MG	Hassayampa River	Headwaters to confluence with ~~Copper Creek~~ <u>unnamed tributary at 34°26'09"/112°30'32"</u>		A&Wc				FBC			FC	AgI	AgL
MG	Hassayampa River	~~Below confluence with Copper Creek to the confluence with Blind Indian Creek.~~ <u>Below confluence with unnamed tributary to confluence with unnamed tributary at 33°51"52"/112°39'56"</u>			A&Ww			FBC			FC	AgI	AgL
MG	Hassayampa River	Below <u>unnamed tributary</u> ~~confluence with Blind Indian Creek~~ to the Buckeye Irrigation Company Canal				A&We			PBC				AgL
MG	Hassayampa River	Below Buckeye Irrigation Company canal to the Gila River			A&Ww			FBC			FC		AgL
MG	Horsethief Lake	34°09'42"/112°17'57"	Igneous	A&Wc				FBC		DWS	FC		AgL
MG	Indian Bend Wash	Headwaters to confluence with the Salt River				A&We			PBC				

MG	Indian Bend Wash Lakes	Scottsdale at 33°30'32"/111°54'24"	Urban		A&Ww				PBC		FC		
MG	Indian School Park Lake	Indian School Road & Hayden Road, Scottsdale at 33°29'39"/111°54'37"	Urban		A&Ww				PBC		FC		
MG	Kiwanis Park Lake	6000 South Mill Avenue, Tempe at 33°22'27"/ 111°56'22"	Urban		A&Ww				PBC		FC	AgI	
MG	Lake Pleasant	33°53'46"/112°16'29"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
MG	Lake Pleasant, Lower	33°50'32"/112°16'03"			A&Ww			FBC			FC	AgI	AgL
MG	Lion Canyon	Headwaters to confluence with Weaver Creek			A&Ww			FBC			FC		AgL
MG	Little Ash Creek	Headwaters to confluence with Ash Creek at			A&Ww			FBC			FC		AgL
MG	Lynx Creek	Headwaters to confluence with unnamed tributary at 34°34'29"/112°21'07"		A&Wc				FBC			FC		AgL
MG	Lynx Creek	Below confluence with unnamed tributary at 34°34'29"/112°21'07" to confluence with Agua Fria River			A&Ww			FBC			FC		AgL
MG	Lynx Lake	34°31'07"/112°23'07"	Deep	A&Wc				FBC		DWS	FC	AgI	AgL
~~MG~~	~~Maricopa Park Lake~~	~~33°35'28"/112°18'15"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	Martinez Canyon	Headwaters to confluence with Box Canyon			A&Ww			FBC			FC		AgL
MG	Martinez ~~Wash~~ Creek	Headwaters to confluence with the Hassayampa River			A&Ww			FBC			FC	AgI	AgL
MG	McKellips Park Lake	Miller Road & McKellips Road, Scottsdale at 33°27'14"/111°54'49"	Urban		A&Ww				PBC		FC	AgI	
MG	McMicken Wash (EDW)	City of Peoria Jomax WWTP outfall at 33°43'31"/ 112°20'15" to confluence with Agua Fria River					A&Wedw		PBC				
MG	Mineral Creek	Headwaters to 33°12'34"/110°59'58"			A&Ww			FBC			FC		AgL
MG	Mineral Creek	33°12'24"/110°59'58" to						PBC					

	(diversion tunnel and lined channel)	33°07'56"/110°58'34"											
MG	Mineral Creek	End of diversion channel to confluence with Gila River			A&Ww			FBC			FC		AgL
MG	Minnehaha Creek	Headwaters to confluence with the Hassayampa River			A&Ww			FBC			FC		AgL
MG	New River	Headwaters to Interstate 17 at 33°54'19.5"/112°08'46"			A&Ww			FBC			FC	AgI	AgL
MG	New River	Below Interstate 17 to confluence with Agua Fria River				A&We			PBC				AgL
MG	Painted Rock Reservoir	33°04'23"/113°00'38"	Sedimentary		A&Ww			FBC			FC	AgI	AgL
MG	Papago Park Ponds	Galvin Parkway, Phoenix at 33°27'15"/111°56'45"	Urban		A&Ww				PBC		FC		
MG	Papago Park South Pond	Curry Road, Tempe 33°26'22"/111°55'55"	Urban		A&Ww				PBC		FC		
MG	Perry Mesa Tank	34°11'03"/112°02'01"			A&Ww			FBC			FC		AgL
MG	Phoenix Area Canals	Granite Reef Dam to all municipal WTP intakes								DWS		AgI	AgL
MG	Phoenix Area Canals	Below municipal WTP intakes and all other locations										AgI	AgL
MG	Picacho Reservoir	32°51'10"/111°28'25"	Shallow		A&Ww			FBC			FC	AgI	AgL
MG	Poland Creek	Headwaters to confluence with Lorena Gulch		A&Wc				FBC			FC		AgL
MG	Poland Creek	Below confluence with Lorena Gulch to confluence with Black Canyon Creek			A&Ww			FBC			FC		AgL
MG	Queen Creek	Headwaters to the Town of Superior WWTP outfall at 33°16’33”/111°07’44”			A&Ww				PBC		FC		AgL
MG	Queen Creek (EDW)	Below Town of Superior WWTP outfall to confluence with Potts Canyon					A&Wedw		PBC				

MG	Queen Creek	Below Potts Canyon to ' Whitlow Dam			A&Ww			FBC			FC		AgL
MG	Queen Creek	Below Whitlow Dam to confluence with Gila River				A&We			PBC				
~~MG~~	~~Riverview Park Lake~~	~~Dobson Road & 8th Street, Mesa at 33°25'50"/ 111°52'29"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
~~MG~~	~~Roadrunner Park Lake~~	~~36th Street & Cactus, Phoenix at 33°35'56"/ 112°00'21"~~	~~Urban~~		~~A&Ww~~				~~PBC~~		~~FC~~		
MG	Salt River	Verde River to 2 km below Granite Reef Dam			A&Ww			FBC		DWS	FC	AgI	AgL
MG	Salt River	2 km below Granite Reef Dam to City of Mesa NW WRF outfall at 33°26'22"/111°53'14"				A&We			PBC				
MG	Salt River (EDW)	City of Mesa NW WRF outfall to Tempe Town Lake					A&Wedw		PBC				
MG	Salt River	Below Tempe Town Lake to Interstate 10 bridge				A&We			PBC				
MG	Salt River	Below Interstate 10 bridge to the City of Phoenix 23rd Avenue WWTP outfall at 33°24'44"/ 112°07'59"			A&Ww				PBC		FC		
MG	Salt River (EDW)	From City of Phoenix 23rd Avenue WWTP outfall to confluence with Gila River					A&Wedw		PBC		FC	AgI	AgL
MG	Siphon Draw (EDW)	Superstition Mountains CFD WWTP outfall at 33°21'40"/111°33'30" to 6 km downstream					A&Wedw		PBC				
MG	Sycamore Creek	Headwaters to confluence with Tank Canyon		A&Wc				FBC			FC		AgL
MG	Sycamore Creek	Below confluence with Tank Canyon to confluence with Agua Fria River			A&Ww			FBC			FC		AgL
MG	Tempe Town Lake	At Mill Avenue Bridge at 33°26'00"/111°56'26"	Urban		A&Ww			FBC			FC		
MG	The Lake Tank	32°54'14"/111°04'15"			A&Ww			FBC			FC		AgL
MG	Tule Creek	Headwaters to confluence with the Agua Fria River			A&Ww			FBC			FC		AgL

MG	Turkey Creek	Headwaters to confluence with unnamed tributary at 34°19'28"/112°21'33"		A&Wc				FBC			FC	AgI	AgL
MG	Turkey Creek	Below confluence with unnamed tributary to confluence with Poland Creek			A&Ww			FBC			FC	AgI	AgL
MG	Unnamed Wash (EDW)	Gila Bend WWTP outfall to confluence with the Gila River					A&Wedw		PBC				
MG	Unnamed Wash (EDW)	Luke Air Force Base WWTP outfall at 33°32'21"/112°19'15" to confluence with the Agua Fria River					A&Wedw		PBC				
MG	Unnamed Wash (EDW)	North Florence WWTP outfall at 33°03'50"/ 111°23'13" to confluence with Gila River					A&Wedw		PBC				
MG	Unnamed Wash (EDW)	Town of Prescott Valley WWTP outfall at34°35'16"/ 112°16'18" to confluence with the Agua Fria River					A&Wedw		PBC				
MG	Unnamed Wash (EDW)	Town of Cave Creek WRF outfall at 33°48'02"/ 111°59'22" to confluence with Cave Creek					A&Wedw		PBC				
MG	Wagner Wash (EDW)	City of Buckeye Festival Ranch WRF outfall at 33°39'14"/112°40'18" to 2 km downstream					A&Wedw		PBC				
MG	Walnut Canyon Creek	Headwaters to confluence with the Gila River			A&Ww			FBC			FC		AgL
MG	Weaver Creek	Headwaters to confluence with Antelope Creek, tributary to Martinez ~~Wash~~ Creek			A&Ww			FBC			FC		AgL
MG	White Canyon Creek	Headwaters to confluence with Walnut Canyon Creek			A&Ww			FBC			FC		AgL
MG	Yavapai Lake (EDW)	Town of Prescott Valley WWTP outfall 002 at 34°36'07"/112°18'48" to Navajo Wash	EDW				A&Wedw		PBC				
SC	Agua Caliente Lake	12325 East Roger Road, Tucson 32°16'51"/ 110°43'52"	Urban		A&Ww				PBC		FC		
SC	Agua Caliente Wash	Headwaters to confluence with Soldier Trail			A&Ww			FBC			FC		AgL

SC	Agua Caliente Wash	Below Soldier Trail to confluence with Tanque Verde Creek				A&We			PBC				AgL
SC	Aguirre Wash	From the Tohono O'odham Indian Reservation boundary to 32°28'38"/111°46'51"				A&We			PBC				
SC	Alambre Wash	Headwaters to confluence with Brawley Wash				A&We			PBC				
SC	Alamo Wash	Headwaters to confluence with Rillito Creek				A&We			PBC				
SC	Altar Wash	Headwaters to confluence with Brawley Wash				A&We			PBC				
SC	Alum Gulch	Headwaters to 31°28'20"/110°43'51"				A&We			PBC				AgL
SC	Alum Gulch	From 31°28'20"/110°43'51" to 31°29'17"/110°44'25"			A&Ww			FBC			FC		AgL
SC	Alum Gulch	Below 31°29'17"/110°44'25" to confluence with Sonoita Creek				A&We			PBC				AgL
SC	Arivaca Creek	Headwaters to confluence with Altar Wash			A&Ww			FBC			FC		AgL
SC	Arivaca Lake	31°31'52"/111°15'06"	Igneous		A&Ww			FBC			FC	AgI	AgL
SC	Atterbury Wash	Headwaters to confluence with Pantano Wash				A&We			PBC				AgL
SC	Bear Grass Tank	31°33'01"/111°11'03"			A&Ww			FBC			FC		AgL
SC	Big Wash	Headwaters to confluence with Cañada del Oro				A&We			PBC				
SC	Black Wash (EDW)	Pima County WWMD Avra Valley WWTP outfall at 32°09'58"/111°11'17" to confluence with Brawley Wash					A&Wedw		PBC				
SC	Bog Hole Tank	31°28'36"/110°37'09"			A&Ww			FBC			FC		AgL
SC	Brawley Wash	Headwaters to confluence with Los Robles Wash				A&We			PBC				
SC	California Gulch	Headwaters To U.S./Mexico border			A&Ww			FBC			FC		AgL
SC	Cañada del Oro	Headwaters to State Route 77			A&Ww			FBC			FC	AgI	AgL

SC	Cañada del Oro	Below State Route 77 to confluence with the Santa Cruz River				A&We			PBC				AgL
SC	Cienega Creek	Headwaters to confluence with Gardner Canyon			A&Ww			FBC			FC		AgL
SC	Cienega Creek (OAW)	From confluence with Gardner Canyon to USGS gaging station (#09484600)			A&Ww			FBC			FC		AgL
SC	Davidson Canyon	Headwaters to unnamed spring at 31°59'00"/ 110°38'49"				A&We			PBC				AgL
SC	Davidson Canyon (OAW)	From unnamed Spring to confluence with unnamed tributary at 31°59'09"/110°38'44"			A&Ww			FBC			FC		AgL
SC	Davidson Canyon (OAW)	Below confluence with unnamed tributary to unnamed spring at 32°00'40"/110°38'36"				A&We			PBC				AgL
SC	Davidson Canyon (OAW)	From unnamed spring to confluence with Cienega Creek			A&Ww			FBC			FC		AgL
SC	Empire Gulch	Headwaters to unnamed spring at 31°47'18"/ 110°38'17"				A&We			PBC				
SC	Empire Gulch	From 31°47'18"/110°38'17" to 31°47'03"/110°37'35"			A&Ww			FBC			FC		
SC	Empire Gulch	From 31°47'03"/110°37'35" to 31°47'05"/ 110°36'58"				A&We			PBC				AgL
SC	Empire Gulch	From 31°47'05"/110°36'58" to confluence with Cienega Creek			A&Ww			FBC			FC		
SC	Flux Canyon	Headwaters to confluence with Alum Gulch				A&We			PBC				AgL
SC	Gardner Canyon Creek	Headwaters to confluence with Sawmill Canyon		A&Wc				FBC			FC		
SC	Gardner Canyon Creek	Below Sawmill Canyon to confluence with Cienega Creek			A&Ww			FBC			FC		
SC	Greene Wash	Santa Cruz River to the Tohono O'odham Indian Reservation boundary				A&We			PBC				

SC	Greene Wash	Tohono O'odham Indian Reservation boundary to confluence with Santa Rosa Wash at 32°53'52"/ 111°56'48"				A&We			PBC				
SC	Harshaw Creek	Headwaters to confluence with Sonoita Creek at				A&We			PBC				AgL
SC	Hit Tank	32°43'57"/111°03'18"			A&Ww			FBC			FC		AgL
SC	Holden Canyon Creek	Headwaters to U.S./Mexico border			A&Ww			FBC			FC		
SC	Huachuca Tank	31°21'11"/110°30'18"			A&Ww			FBC			FC		AgL
SC	Julian Wash	Headwaters to confluence with the Santa Cruz River				A&We			PBC				
SC	Kennedy Lake	Mission Road & Ajo Road, Tucson at 32°10'49"/ 111°00'27"	Urban		A&Ww				PBC		FC		
SC	Lakeside Lake	8300 East Stella Road, Tucson at 32°11'11"/ 110°49'00"	Urban		A&Ww				PBC		FC		
SC	Lemmon Canyon Creek	Headwaters to confluence with unnamed tributary at 32°23'48"/110°47'49"		A&Wc				FBC			FC		
SC	Lemmon Canyon Creek	Below unnamed tributary at 32°23'48"/110°47'49" to confluence with Sabino Canyon Creek			A&Ww			FBC			FC		
SC	Los Robles Wash	Headwaters to confluence with the Santa Cruz River				A&We			PBC				
SC	Madera Canyon Creek	Headwaters to confluence with unnamed tributary at 31°43'42"/110°52'51"		A&Wc				FBC			FC		AgL
SC	Madera Canyon Creek	Below unnamed tributary at 31°43'42"/110°52'51 to confluence with the Santa Cruz River			A&Ww			FBC			FC		AgL
SC	Mattie Canyon	Headwaters to confluence with Cienega Creek			A&Ww			FBC			FC		AgL
SC	Nogales Wash	Headwaters to confluence with Potrero Creek			A&Ww				PBC		FC		
SC	Oak Tree Canyon	Headwaters to confluence with Cienega Creek				A&We			PBC				

SC	Palisade Canyon	Headwaters to confluence with unnamed tributary at 32°22'33"/110°45'31"		A&Wc				FBC			FC		
SC	Palisade Canyon	Below 32°22'33"/110°45'31" to unnamed tributary of Sabino Canyon			A&Ww			FBC			FC		
SC	Pantano Wash	Headwaters to confluence with Tanque Verde Creek				A&We			PBC				
SC	Parker Canyon Creek	Headwaters to confluence with unnamed tributary at 31°24'17"/110°28'47"	A&Wc					FBC			FC		
SC	Parker Canyon Creek	Below unnamed tributary to U.S./Mexico border			A&Ww			FBC			FC		
SC	Parker Canyon Lake	31°25'35"/110°27'15"	Deep	A&Wc				FBC			FC	AgI	AgL
SC	Patagonia Lake	31°29'56"/110°50'49"	Deep		A&Ww			FBC			FC	AgI	AgL
SC	Peña Blanca Lake	31°24'15"/111°05'12"	Igneous		A&Ww			FBC			FC	AgI	AgL
SC	Potrero Creek	Headwaters to Interstate 19				A&We			PBC				AgL
SC	Potrero Creek	Below Interstate 19 to confluence with Santa Cruz River			A&Ww			FBC			FC		AgL
SC	Puertocito Wash	Headwaters to confluence with Altar Wash				A&We			PBC				
SC	Quitobaquito Spring	(Pond and Springs) 31°56'39"/113°01'06"			A&Ww			FBC			FC		AgL
SC	Redrock Canyon Creek	Headwaters to confluence with Harshaw Creek			A&Ww			FBC			FC		
SC	Rillito Creek	Headwaters to confluence with the Santa Cruz River				A&We			PBC				AgL
SC	Romero Canyon Creek	Headwaters to confluence with unnamed tributary at 32°24'29"/110°50'39"		A&Wc				FBC			FC		
SC	Romero Canyon	Below unnamed tributary to confluence with Sutherland Wash			A&Ww			FBC			FC		

	Creek												
SC	Rose Canyon Creek	Headwaters to confluence with Sycamore Canyon		A&Wc				FBC			FC		
SC	Rose Canyon Lake	32°23'13"/110°42'38"	Igneous	A&Wc				FBC			FC		AgL
SC	Ruby Lakes	31°26'29"/111°14'22"	Igneous		A&Ww			FBC			FC		AgL
SC	Sabino Canyon	Headwaters to 32°23'20"/110°47'06"		A&Wc				FBC		DWS	FC	AgI	
SC	Sabino Canyon	Below 32°23'20"/110°47'06" to confluence with Tanque Verde River			A&Ww			FBC		DWS	FC	AgI	
SC	Salero Ranch Tank	31°35'43"/110°53'25"			A&Ww			FBC			FC		AgL
SC	Santa Cruz River	Headwaters to the at U.S./Mexico border			A&Ww			FBC			FC	AgI	AgL
SC	Santa Cruz River	U.S./Mexico border to the Nogales International WWTP outfall at 31°27'25"/110°58'04"			A&Ww			FBC		DWS	FC	AgI	AgL
SC	Santa Cruz River (EDW)	Nogales International WWTP outfall to the ~~Josephine Canyon~~ Tubac Bridge					A&Wedw		PBC				AgL
SC	Santa Cruz River	~~Josephine Canyon~~ Tubac Bridge to Agua Nueva WRF outfall at 32°17'04"/111°01'45"				A&We			PBC				AgL
SC	Santa Cruz River (EDW)	Agua Nueva WRF outfall to Baumgartner Road					A&Wedw		PBC				
SC	Santa Cruz River, West Branch	Headwaters to the confluence with Santa Cruz River				A&We			PBC				AgL
SC	Santa Cruz River	Baumgartner Road to the Ak Chin Indian Reservation boundary				A&We			PBC				AgL
SC	Santa Cruz Wash, North Branch	Headwaters to City of Casa Grande WRF outfall at 32°54'57"/111°47'13"				A&We			PBC				
SC	Santa Cruz Wash, North Branch	City of Casa Grande WRF outfall to 1 km downstream					A&Wedw		PBC				

	(EDW)												
SC	Santa Rosa Wash	Below Tohono O'odham Indian Reservation to the Ak Chin Indian Reservation				A&We			PBC				
SC	Santa Rosa Wash (EDW)	Palo Verde Utilities CO-WRF outfall at 33°04'20"/ 112°01'47" to the Chin Indian Reservation					A&Wedw		PBC				
SC	Soldier Tank	32°25'34"/110°44'43"		A&Wc				FBC			FC		AgL
SC	Sonoita Creek	Headwaters to the Town of Patagonia WWTP outfall at 31°32'25"/110°45'31"				A&We			PBC				AgL
SC	Sonoita Creek (EDW)	Town of Patagonia WWTP outfall to permanent groundwater upwelling point approximately 1600 feet downstream of outfall					A&Wedw		PBC				AgL
SC	Sonoita Creek	Below 1600 feet downstream of Town of Patagonia WWTP outfall groundwater upwelling point to confluence with the Santa Cruz River			A&Ww			FBC			FC	AgI	AgL
SC	Split Tank	31°28'11"/111°05'12"			A&Ww			FBC			FC		AgL
SC	Sutherland Wash	Headwaters to confluence with Cañada del Oro			A&Ww			FBC			FC		
SC	Sycamore Canyon	Headwaters to 32°21'60" / 110°44'48"		A&Wc				FBC			FC		
SC	Sycamore Canyon	From 32°21'60" / 110°44'48" to Sycamore Reservoir			A&Ww			FBC			FC		
SC	Sycamore Canyon	Headwaters to the U.S./Mexico border			A&Ww			FBC			FC		AgL
SC	Sycamore Reservoir	32°20'57'/110°47'38"		A&Wc				FBC			FC		AgL
SC	Tanque Verde Creek	Headwaters to Houghton Road			A&Ww			FBC			FC		AgL
SC	Tanque Verde Creek	Below Houghton Road to confluence with Rillito Creek				A&We			PBC				AgL
SC	Three R Canyon	Headwaters to Unnamed Trib to Three R Canyon at 31°28'26"/110°46'04"				A&We			PBC				AgL
SC	Three R Canyon	From 31°28'26"/110°46'04" to 31°28'28"/110°47'15" (Cox Gulch)			A&Ww			FBC			FC		AgL

SC	Three R Canyon	From (Cox Gulch) 31°28'28"/110°47'15" to confluence with Sonoita Creek				A&We			PBC				AgL
SC	Tinaja Wash	Headwaters to confluence with the Santa Cruz River				A&We			PBC				AgL
SC	Unnamed Wash (EDW)	Oracle Sanitary District WWTP outfall at 32°36'54"/ 110°48'02" to 5 km downstream					A&Wedw		PBC				
SC	Unnamed Wash (EDW)	Arizona City Sanitary District WWTP outfall at 32°45'43"/111°44'24" to confluence with Santa Cruz Wash					A&Wedw		PBC				
SC	Unnamed Wash (EDW)	Saddlebrook WWTP outfall at 32°32'00"/110°53'01" to confluence with Cañada del Oro					A&Wedw		PBC				
SC	Vekol Wash	Headwater to Santa Cruz Wash: Those reaches not located on the Ak-Chin, Tohono O'odham and Gila River Indian Reservations				A&We			PBC				
SC	Wakefield Canyon	Headwaters to confluence with unnamed tributary at 31°52'48"/110°26'27"		A&Wc				FBC			FC		AgL
SC	Wakefield Canyon	Below confluence with unnamed tributary to confluence with Cienega Creek			A&Ww			FBC			FC		AgL
SC	Wild Burro Canyon	Headwaters to confluence with unnamed tributary at 32°27'43"/111°05'47"			A&Ww			FBC			FC		AgL
SC	Wild Burro Canyon	Below confluence with unnamed tributary to confluence with Santa Cruz River				A&We			PBC				AgL
SP	Abbot Canyon	Headwaters to confluence with Whitewater Draw			A&Ww			FBC			FC		AgL
SP	Aravaipa Creek	Headwaters to confluence with Stowe Gulch			A&Ww			FBC			FC		AgL
SP	Aravaipa Creek (OAW)	Stowe Gulch to downstream boundary of Aravaipa Canyon Wilderness Area			A&Ww			FBC			FC		AgL
SP	Aravaipa Creek	Below downstream boundary of Aravaipa Canyon Wilderness Area to confluence with the San Pedro River			A&Ww			FBC			FC		AgL
SP	Ash Creek	Headwaters to 31°50'28"/109°40'04"			A&Ww			FBC			FC	AgI	AgL
SP	Babocomari	Headwaters to confluence with the San			A&Ww			FBC			FC		AgL

	River	Pedro River											
SP	Bass Canyon Creek	Headwaters to confluence with unnamed tributary at 32°26'06"/110°13'22"		A&Wc				FBC			FC		AgL
SP	Bass Canyon Creek	Below confluence with unnamed tributary to confluence with Hot Springs Canyon Creek			A&Ww			FBC			FC		AgL
SP	Bass Canyon Tank	32°24'00"/110°13'00"			A&Ww			FBC			FC		AgL
SP	Bear Creek	Headwaters to U.S./Mexico border			A&Ww			FBC			FC		AgL
~~SP~~	~~Big Creek~~	~~Headwaters to confluence with Pitchfork Canyon~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
SP	Blacktail Pond	Fort Huachuca Military Reservation at 31°31'04"/110°24'47", headwater lake in Blacktail Canyon			A&Ww			FBC			FC		
SP	Black Draw	Headwaters to the U.S./Mexico border			A&Ww			FBC			FC		AgL
SP	Booger Canyon	Headwaters to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
SP	Buck Canyon	Headwaters to confluence with Buck Creek Tank			A&Ww			FBC			FC		AgL
SP	Buck Canyon	Below Buck Creek Tank to confluence with Dry Creek				A&We			PBC				AgL
SP	Buehman Canyon Creek (OAW)	Headwaters to confluence with unnamed tributary at 32°24'54"/110°32'10"			A&Ww			FBC			FC		AgL
SP	Buehman Canyon Creek	Below confluence with unnamed tributary to confluence with San Pedro River			A&Ww			FBC			FC		AgL
~~SP~~	~~Bull Tank~~	~~32°31'13"/110°12'52"~~			~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
SP	Bullock Canyon	Headwaters to confluence with Buehman Canyon			A&Ww			FBC			FC		AgL
SP	Carr Canyon Creek	Headwaters to confluence with unnamed tributary at 31°27'01"/110°15'48"		A&Wc				FBC			FC		AgL
SP	Carr Canyon	Below confluence with unnamed tributary			A&Ww			FBC			FC		AgL

	Creek	to confluence with the San Pedro River											
SP	Copper Creek	Headwaters to confluence with Prospect Canyon			A&Ww			FBC			FC		AgL
SP	Copper Creek	Below confluence with Prospect Canyon to confluence with the San Pedro River				A&We			PBC				AgL
SP	Deer Creek	Headwaters to confluence with unnamed tributary at 32°59'57"/110°20'11"		A&Wc				FBC			FC		AgL
SP	Deer Creek	Below confluence with unnamed tributary to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
SP	Dixie Canyon	Headwaters to confluence with Mexican Canyon			A&Ww			FBC			FC		AgL
SP	Double R Canyon Creek	Headwaters to confluence with Bass Canyon			A&Ww			FBC			FC		
SP	Dry Canyon	Headwaters to confluence with Whitewater draw			A&Ww			FBC			FC		AgL
SP	East Gravel Pit Pond	Fort Huachuca Military Reservation at 31°30'54"/ 110°19'44"	Sedimentary		A&Ww			FBC			FC		
SP	Espiritu Canyon Creek	Headwaters to confluence with Soza Wash			A&Ww			FBC			FC		AgL
~~SP~~	~~Fly Pond~~	~~Fort Huachuca Military Reservation at 31°32'53"/ 110°21'16"~~			~~A&Ww~~			~~FBC~~			~~FC~~		
SP	Fourmile Creek	Headwaters to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
SP	Fourmile Canyon, Left Prong	Headwaters to confluence with unnamed tributary at 32°43'15"/110°23'46"		A&Wc				FBC			FC		AgL
SP	Fourmile Canyon, Left Prong	Below confluence with unnamed tributary to confluence with Fourmile Canyon Creek			A&Ww			FBC			FC		AgL
SP	Fourmile Canyon, Right Prong	Headwaters to confluence with Fourmile Canyon			A&Ww			FBC			FC		AgL
SP	Gadwell Canyon	Headwaters to confluence with Whitewater Draw			A&Ww			FBC			FC		AgL
SP	Garden	Headwaters to confluence with unnamed		A&Wc				FBC		DWS	FC	AgI	

	Canyon Creek	tributary at 31°29'01"/110°19'44"											
SP	Garden Canyon Creek	Below confluence with unnamed tributary to confluence with the San Pedro River			A&Ww			FBC		DWS	FC	AgI	
SP	Glance Creek	Headwaters to confluence with Whitewater Draw			A&Ww			FBC			FC		AgL
SP	Gold Gulch	Headwaters to U.S./Mexico border			A&Ww			FBC			FC		AgL
~~SP~~	~~Goudy Canyon Wash~~	~~Headwaters to confluence with Grant Creek~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
~~SP~~	~~Grant Creek~~	~~Headwaters to confluence with unnamed tributary at 32°38'10"/109°56'37"~~		~~A&Wc~~				~~FBC~~		~~DWS~~	~~FC~~		~~AgL~~
~~SP~~	~~Grant Creek~~	~~Below confluence with unnamed tributary to terminus near Willcox Playa~~			~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
SP	Gravel Pit Pond	Fort Huachuca Military Reservation at 31°30'52"/ 110°19'49"	Sedimentary		A&Ww			FBC			FC		
SP	Greenbush Draw	From U.S./Mexico border to confluence with San Pedro River				A&We			PBC				
SP	Hidden Pond	Fort Huachuca Military Reservation at 32°30'30"/ 109°22'17"			A&Ww			FBC			FC		
~~SP~~	~~High Creek~~	~~Headwaters to confluence with unnamed tributary at 32°33'08"/110°14'42"~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
~~SP~~	~~High Creek~~	~~Below confluence with unnamed tributary to terminus near Willcox Playa~~			~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
SP	Horse Camp Canyon	Headwaters to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
SP	Hot Springs Canyon Creek	Headwaters to confluence with the San Pedro River			A&Ww			FBC			FC		AgL
SP	Johnson Canyon	Headwaters to Whitewater Draw at 31°32'46"/ 109°43'32"			A&Ww			FBC			FC		AgL
~~SP~~	~~Lake Cochise (EDW)~~	~~South of Twin Lakes Municipal Golf Course at 32°13'50"/109°49'27"~~	~~EDW~~				~~A&Wedw~~		~~PBC~~				
													AgL

SP	Leslie Canyon Creek	Headwaters to confluence with Whitewater Draw			A&Ww			FBC			FC		
SP	Lower Garden Canyon Pond	Fort Huachuca Military Reservation at 31°29'39"/ 110°18'34"			A&Ww			FBC			FC		
SP	Mexican Canyon	Headwaters to confluence with Dixie Canyon			A&Ww			FBC			FC		AgL
SP	Miller Canyon	Headwaters to Broken Arrow Ranch Road at 31°25'35"/110°15'04"		A&Wc				FBC		DWS	FC		AgL
SP	Miller Canyon	Below Broken Arrow Ranch Road to confluence with the San Pedro River			A&Ww			FBC		DWS	FC		AgL
~~SP~~	~~Moonshine Creek~~	~~Headwaters to confluence with Post Creek~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
SP	Mountain View Golf Course Pond	Fort Huachuca Military Reservation at 31°32'14"/ 110°18'52"	Sedimentary		A&Ww				PBC		FC		
SP	Mule Gulch	Headwaters to the Lavender Pit at 31°26'11"/ 109°54'02"			A&Ww				PBC		FC		
SP	Mule Gulch	The Lavender Pit to the' Highway 80 bridge at 31°26'30"/109°49'28"				A&We			PBC				
SP	Mule Gulch	Below the Highway 80 bridge to confluence with Whitewater Draw				A&We			PBC				AgL
SP	Oak Grove Canyon	Headwaters to confluence with Turkey Creek			A&Ww			FBC			FC		AgL
SP	Officers Club Pond	Fort Huachuca Military Reservation at 31°32'51"/ 110°21'37"	Sedimentary		A&Ww				PBC		FC		
SP	Paige Canyon Creek	Headwaters to confluence with the San Pedro River			A&Ww			FBC			FC		AgL
SP	Parsons Canyon Creek	Headwaters to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
~~SP~~	~~Pinery Creek~~	~~Headwaters to State Highway 181~~		~~A&Wc~~				~~FBC~~		~~DWS~~	~~FC~~		~~AgL~~
~~SP~~	~~Pinery Creek~~	~~Below State Highway 181 to terminus near Willcox Playa~~			~~A&Ww~~			~~FBC~~		~~DWS~~	~~FC~~		~~AgL~~

~~SP~~	~~Post Creek~~	~~Headwaters to confluence with Grant Creek~~		~~A&Wc~~				~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
SP	Ramsey Canyon Creek	Headwaters to Forest Service Road #110 at 31°27'44"/110°17'30"		A&Wc				FBC			FC	AgI	AgL
SP	Ramsey Canyon Creek	Below Forest Service Road #110 to confluence with Carr Wash			A&Ww			FBC			FC	AgI	AgL
SP	Rattlesnake Creek	Headwaters to confluence with Brush Canyon		A&Wc				FBC			FC		AgL
SP	Rattlesnake Creek	Below confluence with Brush Canyon to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
SP	Redfield Canyon	Headwaters to confluence with unnamed tributary at 32°33'40"/110°18'42"		A&Wc				FBC			FC		AgL
SP	Redfield Canyon	Below confluence with unnamed tributary to confluence with the San Pedro River			A&Ww			FBC			FC		AgL
~~SP~~	~~Riggs Lake~~	~~32°42'28"/109°57'53"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
~~SP~~	~~Rock Creek~~	~~Headwaters to confluence with Turkey Creek Alc~~						~~FBC~~			~~FC~~		~~AgL~~
SP	Rucker Canyon	Headwaters to confluence with Whitewater Draw		A&Wc				FBC			FC		AgL
SP	Rucker Canyon Lake	31°46'46"/109°18'30"	Shallow	A&Wc				FBC			FC		AgL
SP	San Pedro River	U.S./ Mexico Border to Buehman Canyon			A&Ww			FBC			FC	AgI	AgL
SP	San Pedro River	From Buehman canyon to confluence with the Gila River			A&Ww			FBC			FC		AgL
~~SP~~	~~Snow Flat Lake~~	~~32°39'10"/109°51'54"~~	~~Igneous~~	~~A&Wc~~				~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
~~SP~~	~~Soldier Creek~~	~~Headwaters to confluence with Post Creek at 32°40'50"/109°54'41"~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
SP	Soto Canyon	Headwaters to confluence with Dixie Canyon			A&Ww			FBC			FC		AgL
SP	Swamp Springs Canyon	Headwaters to confluence with Redfield Canyon			A&Ww			FBC			FC		AgL

SP	Sycamore Pond I	Fort Huachuca Military Reservation at 31°35'12"/ 110°26'11"	Sedimentary		A&Ww			FBC			FC		
SP	Sycamore Pond II	Fort Huachuca Military Reservation at 31°34'39"/ 110°26'10"	Sedimentary		A&Ww			FBC			FC		
SP	Turkey Creek	Headwaters to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
~~SP~~	~~Turkey Creek~~	~~Headwaters to confluence with Rock Creek~~		~~A&Wc~~				~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
~~SP~~	~~Turkey Creek~~	~~Below confluence with Rock Creek to terminus near Willcox Playa~~			~~A&Ww~~			~~FBC~~			~~FC~~	~~AgI~~	~~AgL~~
SP	Unnamed Wash (EDW)	Mt. Lemmon WWTP outfall at 32°26'51"/110°45'08" to 0.25 km downstream					A&Wedw		PBC				
SP	Virgus Canyon	Headwaters to confluence with Aravaipa Creek			A&Ww			FBC			FC		AgL
SP	Walnut Gulch	Headwaters to Tombstone WWTP outfall at 31°43'47"/110°04'06"				A&We			PBC				
SP	Walnut Gulch (EDW)	Tombstone WWTP outfall to the confluence with Tombstone Wash					A&Wedw		PBC				
SP	Walnut Gulch	Tombstone Wash to confluence with San Pedro River				A&We			PBC				
~~SP~~	~~Ward Canyon~~	~~Headwaters to confluence with Turkey Creek~~		~~A&Wc~~				~~FBC~~			~~FC~~		~~AgL~~
SP	Whitewater Draw	Headwaters to confluence with unnamed tributary at 31°20'36"/109°43'48"				A&We			PBC				AgL
SP	Whitewater Draw	Below confluence with unnamed tributary to U.S./ Mexico border			A&Ww			FBC			FC		AgL
~~SP~~	~~Willcox Playa~~	~~From 32°08'19"/109°50'59" in the Sulphur Springs Valley~~	~~Sedimentary~~		~~A&Ww~~			~~FBC~~			~~FC~~		~~AgL~~
SP	Woodcutters Pond	Fort Huachuca Military Reservation at 31°30'09"/ 110°20'12"	Igneous		A&Ww			FBC			FC		
SR	Ackre Lake	33°37'01"/109°20'40"		A&Wc				FBC			FC	AgI	AgL
SR	Apache Lake	33°37'23"/111°12'26"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
SR	Barnhard Creek	Headwaters to confluence with unnamed tributary at 34°05'37/111°26'40"		A&Wc				FBC			FC		AgL

SR	Barnhardt Creek	Below confluence with unnamed tributary to confluence with Rye Creek			A&Ww			FBC			FC		AgL
SR	Basin Lake	33°55'00"/109°26'09"	Igneous		A&Ww			FBC			FC		AgL
SR	Bear Creek	Headwaters to confluence with the Black River		A&Wc				FBC			FC	AgI	AgL
SR	Bear Wallow Creek (OAW)	Headwaters to confluence with the Black River		A&Wc				FBC			FC		AgL
SR	Bear Wallow Creek, North Fork (OAW)	Headwaters to confluence with Bear Wallow Creek		A&Wc				FBC			FC		AgL
SR	Bear Wallow Creek, South Fork (OAW)	Headwaters to confluence with Bear Wallow Creek		A&Wc				FBC			FC		AgL
SR	Beaver Creek	Headwaters to confluence with Black River		A&Wc				FBC			FC	AgI	AgL
SR	Big Lake	33°52'36"/109°25'33"	Igneous	A&Wc				FBC		DWS	FC	AgI	AgL
SR	Black River	Headwaters to confluence with Salt River		A&Wc				FBC		DWS	FC	AgI	AgL
SR	Black River, East Fork	From 33°51'19"/109°18'54" to confluence with the Black River		A&Wc				FBC		DWS	FC	AgI	AgL
SR	Black River, North Fork of East Fork	Headwaters to confluence with Boneyard Creek		A&Wc				FBC		DWS	FC	AgI	AgL
SR	Black River, West Fork	Headwaters to confluence with the Black River		A&Wc				FBC		DWS	FC	AgI	AgL
SR	Bloody Tanks Wash	Headwaters to Schultze Ranch Road				A&We			PBC				AgL
SR	Bloody Tanks Wash	Schultze Ranch Road to confluence with Miami Wash				A&We			PBC				
SR	Boggy Creek	Headwaters to confluence with Centerfire Creek		A&Wc				FBC			FC	AgI	AgL
SR	Boneyard Creek	Headwaters to confluence with Black River, East Fork		A&Wc				FBC			FC	AgI	AgL
SR	Boulder Creek	Headwaters to confluence with LaBarge Creek			A&Ww			FBC			FC		
SR	Campaign Creek	Headwaters to Roosevelt Lake			A&Ww			FBC			FC		AgL

SR	Canyon Creek	Headwaters to the White Mountain Apache Reservation boundary		A&Wc				FBC		DWS	FC	AgI	AgL
SR	Canyon Lake	33°32'44"/111°26'19"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
SR	Centerfire Creek	Headwaters to confluence with the Black River		A&Wc				FBC			FC	AgI	AgL
SR	Chambers Draw Creek	Headwaters to confluence with the North Fork of the East Fork of Black River		A&Wc				FBC			FC		AgL
SR	Cherry Creek	Headwaters to confluence with unnamed tributary at 34°05'09"/110°56'07"		A&Wc				FBC			FC	AgI	AgL
SR	Cherry Creek	Below unnamed tributary to confluence with the Salt River			A&Ww			FBC			FC	AgI	AgL
SR	Christopher Creek	Headwaters to confluence with Tonto Creek		A&Wc				FBC			FC	AgI	AgL
SR	Cold Spring Canyon Creek	Headwaters to confluence with unnamed tributary at 33°49'50"/110°52'58"		A&Wc				FBC			FC		AgL
SR	Cold Spring Canyon Creek	Below confluence with unnamed tributary to confluence with Cherry Creek			A&Ww			FBC			FC		AgL
SR	Conklin Creek	Headwaters to confluence with the Black River		A&Wc				FBC			FC	AgI	AgL
SR	Coon Creek	Headwaters to confluence with unnamed tributary at 33°46'41"/110°54'26"		A&Wc				FBC			FC		AgL
SR	Coon Creek	Below confluence with unnamed tributary to confluence with Salt River			A&Ww			FBC			FC		AgL
SR	Corduroy Creek	Headwaters to confluence with Fish Creek		A&Wc				FBC			FC	AgI	AgL
SR	Coyote Creek	Headwaters to confluence with the Black River, East Fork		A&Wc				FBC			FC	AgI	AgL
SR	Crescent Lake	33°54'38"/109°25'18"	Shallow	A&Wc				FBC			FC	AgI	AgL
SR	Deer Creek	Headwaters to confluence with the Black River, East Fork		A&Wc				FBC			FC		AgL
SR	Del Shay Creek	Headwaters to confluence with Gun Creek			A&Ww			FBC			FC		AgL

SR	Devils Chasm Creek	Headwaters to confluence with unnamed tributary at 33°48'46" /110°52'35"		A&Wc				FBC			FC		AgL
SR	Devils Chasm Creek	Below confluence with unnamed tributary to confluence with Cherry Creek			A&Ww			FBC			FC		AgL
SR	Dipping Vat Reservoir	33°55'47"/109°25'31"	Igneous		A&Ww			FBC			FC		AgL
SR	Double Cienega Creek	Headwaters to confluence with Fish Creek		A&Wc				FBC			FC		AgL
SR	Fish Creek	Headwaters to confluence with the Black River		A&Wc				FBC			FC	AgI	AgL
SR	Fish Creek	Headwaters to confluence with the Salt River			A&Ww			FBC			FC		
SR	Gold Creek	Headwaters to confluence with unnamed tributary at 33°59'47"/111°25'10"		A&Wc				FBC			FC		AgL
SR	Gold Creek	Below confluence with unnamed tributary to confluence with Tonto Creek			A&Ww			FBC			FC		AgL
SR	Gordon Canyon Creek	Headwaters to confluence with Hog Canyon		A&Wc				FBC			FC		AgL
SR	Gordon Canyon Creek	Below confluence with Hog Canyon to confluence with Haigler Creek			A&Ww			FBC			FC		AgL
SR	Greenback Creek	Headwaters to confluence with Tonto Creek			A&Ww			FBC			FC		AgL
SR	Haigler Creek	Headwaters to confluence with unnamed tributary at 34°12'23"/111°00'15"		A&Wc				FBC			FC	AgI	AgL
SR	Haigler Creek	Below confluence with unnamed tributary to confluence with Tonto Creek			A&Ww			FBC			FC	AgI	AgL
SR	Hannagan Creek	Headwaters to confluence with Beaver Creek		A&Wc				FBC			FC		AgL
SR	Hay Creek (OAW)	Headwaters to confluence with the Black River, West Fork		A&Wc				FBC			FC		AgL
SR	Home Creek	Headwaters to confluence with the Black River, West Fork		A&Wc				FBC			FC		AgL

SR	Horse Creek	Headwaters to confluence with the Black River, West Fork		A&Wc				FBC			FC		AgL
SR	Horse Camp Creek	Headwaters to confluence with unnamed tributary at 33°54'00"/110°50'07"		A&Wc				FBC			FC		AgL
SR	Horse Camp Creek	Below confluence with unnamed tributary to confluence with Cherry Creek			A&Ww			FBC			FC		AgL
SR	Horton Creek	Headwaters to confluence with Tonto Creek		A&Wc				FBC			FC	AgI	AgL
SR	Houston Creek	Headwaters to confluence with Tonto Creek			A&Ww			FBC			FC		AgL
SR	Hunter Creek	Headwaters to confluence with Christopher Creek		A&Wc				FBC			FC		AgL
SR	LaBarge Creek	Headwaters to Canyon Lake			A&Ww			FBC			FC		
SR	Lake Sierra Blanca	33°52'25"/109°16'05"		A&Wc				FBC			FC	AgI	AgL
SR	Miami Wash	Headwaters to confluence with Pinal Creek				A&We			PBC				
SR	Mule Creek	Headwaters to confluence with Canyon Creek		A&Wc				FBC		DWS	FC	AgI	AgL
SR	Open Draw Creek	Headwaters to confluence with the East Fork of Black River		A&Wc				FBC			FC		AgL
SR	P B Creek	Headwaters to Forest Service Road #203 at 33°57'08"/110°56'12"		A&Wc				FBC			FC		AgL
SR	P B Creek	Below Forest Service Road #203 to Cherry Creek			A&Ww			FBC			FC		AgL
SR	Pinal Creek	Headwaters to confluence with unnamed EDW wash (Globe WWTP) at 33°25'29"/110°48'20"				A&We			PBC				AgL
SR	Pinal Creek (EDW)	Confluence with unnamed EDW wash (Globe WWTP) to 33°26'55"/110°49' 25"					A&Wedw		PBC				
SR	Pinal Creek	From 33°26'55"/110°49'25" to Lower Pinal Creek water treatment plant outfall #001 at 33°31'04"/ 110°51'55"				A&We			PBC				AgL
SR	Pinal Creek	From Lower Pinal Creek WTP outfall # to See Ranch Crossing at 33°32'25"/110°52'28"					A&Wedw		PBC				

SR	Pinal Creek	From See Ranch Crossing to confluence with unnamed tributary at 33°35'28"/110°54'31"			A&Ww			FBC					
SR	Pinal Creek	From unnamed tributary to confluence with Salt River			A&Ww			FBC			FC		
SR	Pine Creek	Headwaters to confluence with the Salt River			A&Ww			FBC			FC		
SR	Pinto Creek	Headwaters to confluence with unnamed tributary at 33°19'27"/110°54'58"		A&Wc				FBC			FC	AgI	AgL
SR	Pinto Creek	Below confluence with unnamed tributary to Roosevelt Lake			A&Ww			FBC			FC	AgI	AgL
SR	Pole Corral Lake	33°30'38"/110°00'15"	Igneous		A&Ww			FBC			FC	AgI	AgL
SR	Pueblo Canyon Creek	Headwaters to confluence with unnamed tributary at 33°50'23"/110°51'37"		A&Wc				FBC			FC		AgL
SR	Pueblo Canyon Creek	Below confluence with unnamed tributary to confluence with Cherry Creek			A&Ww			FBC			FC		AgL
SR	Reevis Creek	Headwaters to confluence with Pine Creek			A&Ww			FBC			FC		
SR	Reservation Creek	Headwaters to confluence with the Black River		A&Wc				FBC			FC		AgL
SR	Reynolds Creek	Headwaters to confluence with Workman Creek		A&Wc				FBC			FC		AgL
SR	Roosevelt Lake	33°52'17"/111°00'17"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
SR	Russell Gulch	From Headwaters to confluence with Miami Wash				A&We			PBC				
SR	Rye Creek	Headwaters to confluence with Tonto Creek			A&Ww			FBC			FC		AgL
SR	Saguaro Lake	33°33'44"/111°30'55"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
SR	Salome Creek	Headwaters to confluence with the Salt River			A&Ww			FBC			FC	AgI	AgL
SR	Salt House Lake	33°57'04"/109°20'11"	Igneous		A&Ww			FBC			FC		AgL

SR	Salt River	White Mountain Apache Reservation Boundary at 33°48'52"/110°31'33" to Roosevelt Lake			A&Ww			FBC			FC		AgL
SR	Salt River	Theodore Roosevelt Dam to 2 km below Granite Reef Dam			A&Ww			FBC		DWS	FC	AgI	AgL
SR	Slate Creek	Headwaters to confluence with Tonto Creek			A&Ww			FBC			FC		AgL
SR	Snake Creek (OAW)	Headwaters to confluence with the Black River		A&Wc				FBC			FC		AgL
SR	Spring Creek	Headwaters to confluence with Tonto Creek			A&Ww			FBC			FC		AgL
SR	Stinky Creek (OAW)	Headwaters to confluence with the Black River, West Fork		A&Wc				FBC			FC		AgL
SR	Thomas Creek	Headwaters to confluence with Beaver Creek		A&Wc				FBC			FC		AgL
SR	Thompson Creek	Headwaters to confluence with the West Fork of the Black River		A&Wc				FBC			FC		AgL
SR	Tonto Creek	Headwaters to confluence with unnamed tributary at 34°18'11"/111°04'18"		A&Wc				FBC			FC	AgI	AgL
SR	Tonto Creek	Below confluence with unnamed tributary to Roosevelt Lake			A&Ww			FBC			FC	AgI	AgL
SR	Turkey Creek	Headwaters to confluence with Rock Creek		A&Wc				FBC			FC		
SR	Wildcat Creek	Headwaters to confluence with Centerfire Creek		A&Wc				FBC			FC		AgL
SR	Willow Creek	Headwaters to confluence with Beaver Creek		A&Wc				FBC			FC		AgL
SR	Workman Creek	Headwaters to confluence with Reynolds Creek		A&Wc				FBC			FC	AgI	AgL
SR	Workman Creek	Below confluence with Reynolds Creek to confluence with Salome Creek			A&Ww			FBC			FC	AgI	AgL
UG	Apache Creek	Headwaters to confluence with the Gila River			A&Ww			FBC			FC		AgL
UG	Ash Creek	Headwaters to confluence with unnamed tributary at 32°46'15"/109°51'45"		A&Wc				FBC			FC		AgL
UG	Ash Creek	Below confluence with unnamed tributary to confluence with the Gila River			A&Ww			FBC			FC		AgL

UG	Bennett Wash	Headwaters to the Gila River				A&We			PBC				
UG	Bitter Creek	Headwaters to confluence with the Gila River			A&Ww			FBC			FC		
UG	Blue River	Headwaters to confluence with Strayhorse Creek at 33°29'02"/109°12'14"		A&Wc				FBC			FC	AgI	AgL
UG	Blue River	Below confluence with Strayhorse Creek to confluence with San Francisco River			A&Ww			FBC			FC	AgI	AgL
UG	Bonita Creek (OAW)	San Carlos Indian Reservation boundary to confluence with the Gila River			A&Ww			FBC		DWS	FC		AgL
UG	Buckelew Creek	Headwaters to confluence with Castle Creek		A&Wc				FBC			FC		AgL
UG	Campbell Blue Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		AgL
UG	Castle Creek	Headwaters to confluence with Campbell Blue Creek		A&Wc				FBC			FC		AgL
UG	Cave Creek (OAW)	Headwaters to confluence with South Fork Cave Creek		A&Wc				FBC			FC	AgI	AgL
UG	Cave Creek (OAW)	Below confluence with South Fork Cave Creek to Coronado National Forest boundary			A&Ww			FBC			FC	AgI	AgL
UG	Cave Creek	Below Coronado National Forest boundary to New Mexico border			A&Ww			FBC			FC	AgI	AgL
UG	Cave Creek, South Fork	Headwaters to confluence with Cave Creek		A&Wc				FBC			FC	AgI	AgL
UG	Chase Creek	Headwaters to the Phelps-Dodge Morenci Mine			A&Ww			FBC			FC		AgL
UG	Chase Creek	Below the Phelps-Dodge Morenci Mine to confluence with San Francisco River				A&We			PBC		<u>FC</u>		
UG	Chitty Canyon Creek	Headwaters to confluence with Salt House Creek		A&Wc				FBC			FC		AgL
UG	Cima Creek	Headwaters to confluence with Cave Creek		A&Wc				FBC			FC		AgL
UG	Cluff Reservoir #1	32°48'55"/109°50'46"	Sedimentary		A&Ww			FBC			FC	AgI	AgL

UG	Cluff Reservoir #3	32°48'21"/109°51'46"	Sedimentary		A&Ww			FBC			FC	AgI	AgL
UG	Coleman Creek	Headwaters to confluence with Campbell Blue Creek		A&Wc				FBC			FC		AgL
UG	Dankworth Lake	32°43'13"/109°42'17"	Sedimentary	A&Wc				FBC			FC		
UG	Deadman Canyon Creek	Headwaters to confluence with unnamed tributary at 32°43'50"/109°49'03"		A&Wc				FBC		DWS	FC		AgL
UG	Deadman Canyon Creek	Below confluence with unnamed tributary to confluence with Graveyard Wash			A&Ww			FBC		DWS	FC		AgL
UG	Eagle Creek	Headwaters to confluence with unnamed tributary at 33°22'32"/109°29'43"		A&Wc				FBC		DWS	FC	AgI	AgL
UG	Eagle Creek	Below confluence with unnamed tributary to confluence with the Gila River			A&Ww			FBC		DWS	FC	AgI	AgL
UG	East Eagle Creek	Headwaters to confluence with Eagle Creek		A&Wc				FBC			FC		AgL
UG	East Turkey Creek	Headwaters to confluence with unnamed tributary at 31°58'22"/109°12'20"		A&Wc				FBC			FC		AgL
UG	East Turkey Creek	Below confluence with unnamed tributary to terminus near San Simon River			A&Ww			FBC			FC		AgL
UG	East Whitetail	Headwaters to terminus near San Simon River			A&Ww			FBC			FC		AgL
UG	Emigrant Canyon	Headwaters to terminus near San Simon River			A&Ww			FBC			FC		AgL
UG	Evans Pond #1	32°49'19"/109°51'12"	Sedimentary		A&Ww			FBC			FC	AgI	AgL
UG	Evans Pond #2	32°49'14"/109°51'09"	Sedimentary		A&Ww			FBC			FC	AgI	AgL
UG	Fishhook Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		AgL
UG	Foote Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		AgL

UG	Frye Canyon Creek	Headwaters to Frye Mesa Reservoir		A&Wc				FBC		DWS	FC		AgL
UG	Frye Canyon Creek	Frye Mesa reservoir to terminus at Highline Canal.			A&Ww			FBC			FC		AgL
UG	Frye Mesa Reservoir	32°45'14"/109°50'02"	Igneous	A&Wc				FBC		DWS	FC		
UG	Gibson Creek	Headwaters to confluence with Marijilda Creek		A&Wc				FBC			FC		AgL
UG	Gila River	New Mexico border to the San Carlos Indian Reservation boundary			A&Ww			FBC			FC	AgI	AgL
UG	Grant Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		AgL
UG	Judd Lake	33°51'15"/109°09'35"	Sedimentary	A&Wc				FBC			FC		
UG	K P Creek (OAW)	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		AgL
UG	Lanphier Canyon Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		AgL
UG	Little Blue Creek	Headwaters to confluence with Dutch Blue Creek		A&Wc				FBC			FC		AgL
UG	Little Blue Creek	Below confluence with Dutch Blue Creek to confluence with Blue Creek			A&Ww			FBC			FC		AgL
UG	Little Creek	Headwaters to confluence with the San Francisco River		A&Wc				FBC			FC		
UG	~~George's~~ Georges Tank	33°51'24"/109°08'30"	Sedimentary	A&Wc				FBC			FC		AgL
UG	Luna Lake	33°49'50"/109°05'06"	Sedimentary	A&Wc				FBC			FC		AgL
UG	Marijilda Creek	Headwaters to confluence with Gibson Creek		A&Wc				FBC			FC		AgL
UG	Marijilda Creek	Below confluence with Gibson Creek to confluence with Stockton Wash			A&Ww			FBC			FC	AgI	AgL
UG	Markham Creek	Headwaters to confluence with the Gila River			A&Ww			FBC			FC		AgL
UG	Pigeon	Headwaters to confluence with the Blue			A&Ww			FBC			FC		AgL

	Creek	River											
UG	Raspberry Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		
UG	Roper Lake	32°45'23"/109°42'14"	Sedimentary		A&Ww			FBC			FC		
UG	San Francisco River	Headwaters to the New Mexico border		A&Wc				FBC			FC	AgI	AgL
UG	San Francisco River	New Mexico border to confluence with the Gila River			A&Ww			FBC			FC	AgI	AgL
UG	San Simon River	Headwaters to confluence with the Gila River				A&We			PBC				AgL
UG	Sheep Tank	32°46'14"/109°48'09"	Sedimentary		A&Ww			FBC			FC		AgL
UG	Smith Pond	32°49'15"/109°50'36"	Sedimentary		A&Ww			FBC			FC		
UG	Squaw Creek	Headwaters to confluence with Thomas Creek		A&Wc				FBC			FC		AgL
UG	Stone Creek	Headwaters to confluence with the San Francisco River		A&Wc				FBC			FC	AgI	AgL
UG	Strayhorse Creek	Headwaters to confluence with the Blue River		A&Wc				FBC			FC		
UG	Thomas Creek	Headwaters to confluence with Rousensock Creek		A&Wc				FBC			FC		AgL
UG	Thomas Creek	Below confluence with Rousensock Creek to confluence with Blue River			A&Ww			FBC			FC		AgL
UG	Tinny Pond	33°47'49"/109°04'27"	Sedimentary		A&Ww			FBC			FC		AgL
UG	Turkey Creek	Headwaters to confluence with Campbell Blue Creek		A&Wc				FBC			FC		AgL
VR	American Gulch	Headwaters to the Northern Gila County Sanitary District WWTP outfall at 34°14'02"/111°22'14"			A&Ww			FBC			FC	AgI	AgL
VR	American Gulch (EDW)	Below Northern Gila County Sanitary District WWTP outfall to confluence with the East Verde River					A&Wedw		PBC				
VR	Apache Creek	Headwaters to confluence with Walnut Creek			A&Ww			FBC			FC		AgL
VR	Ashbrook	Headwaters to the Fort McDowell Indian				A&We			PBC				

	Wash	Reservation boundary											
VR	Aspen Creek	Headwaters to confluence with Granite Creek			A&Ww			FBC			FC		
VR	Bar Cross Tank	35°00'41"/112°05'39"			A&Ww			FBC			FC		AgL
VR	Barrata Tank	35°02'43"/112°24'21"			A&Ww			FBC			FC		AgL
VR	Bartlett Lake	33°49'52"/111°37'44"	Deep		A&Ww			FBC		DWS	FC	AgI	AgL
VR	Beaver Creek	Headwaters to confluence with the Verde River			A&Ww			FBC			FC		AgL
VR	Big Chino Wash	Headwaters to confluence with Sullivan Lake				A&We			PBC				AgL
VR	Bitter Creek	Headwaters to the Jerome WWTP outfall at 34°45'12"/112°06'24"				A&We			PBC				AgL
VR	Bitter Creek (EDW)	Jerome WWTP outfall to the Yavapai Apache Indian Reservation boundary					A&Wedw		PBC				AgL
VR	Bitter Creek	Below the Yavapai Apache Indian Reservation boundary to confluence with the Verde River			A&Ww			FBC			FC	AgI	AgL
VR	Black Canyon Creek	Headwaters to confluence with unnamed tributary at 34°39'20"/112°05'06"		A&Wc				FBC			FC		AgL
VR	Black Canyon Creek	Below confluence with unnamed tributary to confluence with the Verde River			A&Ww			FBC			FC		AgL
VR	Bonita Creek	Headwaters to confluence with Ellison Creek		A&Wc				FBC		DWS	FC		
VR	Bray Creek	Headwaters to confluence with Webber Creek		A&Wc				FBC			FC		AgL
VR	Camp Creek	Headwaters to confluence with the ~~Sycamore Creek~~ Verde River			A&Ww			FBC			FC		AgL
VR	Cereus Wash	Headwaters to the Fort McDowell Indian Reservation boundary				A&We			PBC				
VR	Chase Creek	Headwaters to confluence with the East Verde River		A&Wc				FBC		DWS	FC		
VR	Clover Creek	Headwaters to confluence with Headwaters of West Clear Creek		A&Wc				FBC			FC		AgL

VR	Coffee Creek	Headwaters to confluence with Spring Creek			A&Ww			FBC			FC		AgL
VR	Colony Wash	Headwaters to the Fort McDowell Indian Reservation boundary				A&We			PBC				
VR	Dead Horse Lake	34°45'08"/112°00'42"	Shallow		A&Ww			FBC			FC		
VR	Deadman Creek	Headwaters to Horseshoe Reservoir			A&Ww			FBC			FC		AgL
VR	Del Monte Gulch	Headwaters to confluence with City of Cottonwood WWTP outfall 002 at 34°43'57"/112°02'46"				A&We			PBC				
VR	Del Monte Gulch (EDW)	City of Cottonwood WWTP outfall 002 at 34°43'57"/ 112°02'46" to confluence with ~~Blowout Creek~~ Verde River					A&Wedw		PBC				
VR	Del Rio Dam Lake	34°48'55"/112°28'03"	Sedimentary		A&Ww			FBC			FC		AgL
VR	Dry Beaver Creek	Headwaters to confluence with Beaver Creek			A&Ww			FBC			FC	AgI	AgL
VR	Dry Creek (EDW)	Sedona Ventures WWTP outfall at 34°50'02"/ 111°52'17" to 34°48'12"/111°52'48"					A&Wedw		PBC				
VR	Dude Creek	Headwaters to confluence with the East Verde River		A&Wc				FBC			FC	AgI	AgL
VR	East Verde River	Headwaters to confluence with Ellison Creek		A&Wc				FBC		DWS	FC	AgI	AgL
VR	East Verde River	Below confluence with Ellison Creek to confluence with the Verde River			A&Ww			FBC		DWS	FC	AgI	AgL
VR	Ellison Creek	Headwaters to confluence with the East Verde River		A&Wc				FBC			FC		AgL
VR	Fossil Creek (OAW)	Headwaters to confluence with the Verde River			A&Ww			FBC			FC		AgL
VR	Fossil Springs (OAW)	34°25'24"/111°34'27"			A&Ww			FBC		DWS	FC		
VR	Foxboro Lake	34°53'42"/111°39'55"			A&Ww			FBC			FC		AgL
VR	Fry Lake	35°03'45"/111°48'04"			A&Ww			FBC			FC		AgL

VR	Gap Creek	Headwaters to confluence with Government Spring		A&Wc				FBC			FC		AgL
VR	Gap Creek	Below Government Spring to confluence with the Verde River			A&Ww			FBC			FC		AgL
VR	Garrett Tank	35°18'57"/112°42'20"			A&Ww			FBC			FC		AgL
VR	Goldwater Lake, Lower	34°29'56"/112°27'17"	Sedimentary	A&Wc				FBC		DWS	FC		
VR	Goldwater Lake, Upper	34°29'52"/112°26'59"	Igneous	A&Wc				FBC		DWS	FC		
VR	Granite Basin Lake	34°37'01"/112°32'58"	Igneous	A&Wc				FBC			FC	AgI	AgL
VR	Granite Creek	Headwaters to Watson Lake		A&Wc				FBC			FC	AgI	AgL
VR	Granite Creek	Below Watson Lake to confluence with the Verde River			A&Ww			FBC			FC	AgI	AgL
VR	Green Valley Lake (EDW)	34°13'54"/111°20'45"	Urban				A&Wedw		PBC		FC		
VR	Heifer Tank	35°20'27"/112°32'59"			A&Ww			FBC			FC		AgL
VR	Hells Canyon Tank	35°04'59"/112°24'07"	Igneous		A&Ww			FBC			FC		AgL
VR	Homestead Tank	35°21'24"/112°41'36"	Igneous		A&Ww			FBC			FC		AgL
VR	Horse Park Tank	34°58'15"/111°36'32"			A&Ww			FBC			FC		AgL
VR	Horseshoe Reservoir	34°00'25"/111°43'36"	Sedimentary		A&Ww			FBC			FC	AgI	AgL
VR	Houston Creek	Headwaters to confluence with the Verde River			A&Ww			FBC			FC		AgL
VR	Huffer Tank	34°27'46"/111°23'11"			A&Ww			FBC			FC		AgL
VR	J.D. Dam Lake	35°04'02"/112°01'48"	Shallow	A&Wc				FBC			FC	AgI	AgL
VR	Jacks Canyon	Headwaters to Big Park WWTP outfall at 34°45'46"/ 111°45'51"				A&We			PBC				
VR	Jacks Canyon (EDW)	Below Big Park WWTP outfall to confluence with Dry Beaver Creek					A&Wedw		PBC				

VR	Lime Creek	Headwaters to Horseshoe Reservoir			A&Ww			FBC			FC		AgL
VR	Masonry Number 2 Reservoir	35°13'32"/112°24'10"		A&Wc				FBC			FC	AgI	AgL
VR	McLellan Reservoir	35°13'09"/112°17'06"	Igneous		A&Ww			FBC			FC	AgI	AgL
VR	Meath Dam Tank	35°07'52"/112°27'35"			A&Ww			FBC			FC		AgL
VR	Mullican Place Tank	34°44'16"/111°36'10"	Igneous		A&Ww			FBC			FC		AgL
VR	Oak Creek (OAW)	Headwaters to confluence with unnamed tributary at 34°59'15"/111°44'47"		A&Wc				FBC		DWS	FC	AgI	AgL
VR	Oak Creek (OAW)	Below confluence with unnamed tributary to confluence with Verde River			A&Ww			FBC		DWS	FC	AgI	AgL
VR	Oak Creek, West Fork (OAW)	Headwaters to confluence with Oak Creek		A&Wc				FBC			FC		AgL
VR	Odell Lake	34°56'5"/111°37'53"	Igneous	A&Wc				FBC			FC		
VR	Peck's Lake	34°46'51"/112°02'01"	Shallow		A&Ww			FBC			FC	AgI	AgL
VR	Perkins Tank	35°06'42"/112°04'12"	Shallow	A&Wc				FBC			FC		AgL
VR	Pine Creek	Headwaters to confluence with unnamed tributary at 34°21'51"/111°26'49"		A&Wc				FBC		DWS	FC	AgI	AgL
VR	Pine Creek	Below confluence with unnamed tributary to confluence with East Verde River			A&Ww			FBC		DWS	FC	AgI	AgL
VR	Red Creek	Headwaters to confluence with the Verde River			A&Ww			FBC			FC		AgL
VR	Reservoir #1	35°13'5"/111°50'09"	Igneous		A&Ww			FBC			FC		
VR	Reservoir #2	35°13'17"/111°50'39"	Igneous		A&Ww			FBC			FC		
VR	Roundtree Canyon Creek	Headwaters to confluence with Tangle Creek			A&Ww			FBC			FC		AgL
VR	Scholze Lake	35°11'53"/112°00'37"	Igneous	A&Wc				FBC			FC		AgL
VR	Spring Creek	Headwaters to confluence with unnamed tributary at 34°57'23"/111°57'21"		A&Wc				FBC			FC	AgI	AgL
VR	Spring Creek	Below confluence with unnamed tributary			A&Ww			FBC			FC	AgI	AgL

		to confluence with Oak Creek											
VR	Steel Dam Lake	35°13'36"/112°24'54"	Igneous	A&Wc				FBC			FC		AgL
VR	Stehr Lake	34°22'01"/111°40'02"	Sedimentary		A&Ww			FBC			FC		AgL
VR	Stoneman Lake	34°46'47"/111°31'14"	Shallow	A&Wc				FBC			FC	AgI	AgL
VR	Sullivan Lake	34°51'42"/112°27'51"			A&Ww			FBC			FC	AgI	AgL
VR	Sycamore Creek	Headwaters to confluence with unnamed tributary at 35°03'41"/111°57'31"		A&Wc				FBC			FC	AgI	AgL
VR	Sycamore Creek	Below confluence with unnamed tributary to confluence with Verde River			A&Ww			FBC			FC	AgI	AgL
VR	Sycamore Creek	Headwaters to confluence with Verde River at 33°37'55"/111°39'58"			A&Ww			FBC			FC	AgI	AgL
VR	Sycamore Creek	Headwaters to confluence with ~~Verde River at 34°04'42"/111°42'14"~~ Fort McDowell Indian Reservation boundary at 33°39'19.8"/-111°37'42.7"			A&Ww			FBC			FC		AgL
VR	Tangle Creek	Headwaters to confluence with Verde River			A&Ww			FBC			FC	AgI	AgL
VR	Trinity Tank	35°27'44"/112°48'01"			A&Ww			FBC			FC		AgL
VR	Unnamed Wash	Flagstaff Meadows WWTP outfall at '35°13'59"/ 111°48'35" to Volunteer Wash					A&Wedw		PBC				
VR	Verde River	From headwaters at confluence of Chino Wash and Granite Creek to Bartlett Lake Dam			A&Ww			FBC			FC	AgI	AgL
VR	Verde River	Below Bartlett Lake Dam to Salt River			A&Ww			FBC		DWS	FC	AgI	AgL
VR	Walnut Creek	Headwaters to confluence with Big Chino Wash			A&Ww			FBC			FC		AgL
VR	Watson Lake	34°34'58"/112°25'26"	Igneous		A&Ww			FBC			FC	AgI	AgL
VR	Webber Creek	Headwaters to confluence with the East Verde River		A&Wc				FBC			FC		AgL
VR	West Clear Creek	Headwaters to confluence with Meadow Canyon		A&Wc				FBC			FC		AgL
VR	West Clear	Below confluence with Meadow Canyon to			A&Ww			FBC			FC	AgI	AgL

	Creek	confluence with the Verde River											
VR	Wet Beaver Creek	Headwaters to unnamed springs at 34°41'17"/ 111°34'34"		A&Wc				FBC			FC	AgI	AgL
VR	Wet Beaver Creek	Below unnamed springs to confluence with Dry Beaver Creek			A&Ww			FBC			FC	AgI	AgL
VR	Whitehorse Lake	35°06'59"/112°00'48"	Igneous	A&Wc				FBC		DWS	FC	AgI	AgL
VR	Williamson Valley Wash	Headwaters to confluence with Mint Wash				A&We			PBC				AgL
VR	Williamson Valley Wash	From confluence of Mint Wash to 10.5 km downstream			A&Ww			FBC			FC		AgL
VR	Williamson Valley Wash	From 10.5 km downstream of Mint Wash confluence to confluence with Big Chino Wash				A&We			PBC				AgL
VR	Williscraft Tank	35°11'22"/112°35'40"			A&Ww			FBC			FC		AgL
VR	Willow Creek	Above Willow Creek Reservoir		A&Wc				FBC			FC		AgL
VR	Willow Creek	Below Willow Creek Reservoir to confluence with Granite Creek			A&Ww			FBC			FC		AgL
VR	Willow Creek Reservoir	34°36'17"/112°26'19"	Shallow		A&Ww			FBC			FC	AgI	AgL
VR	Willow Valley Lake	34°41'08"/111°20'02"	Sedimentary		A&Ww			FBC			FC		AgL

ARTICLE 2. ~~REPEALED~~ WATER QUALITY STANDARDS FOR NON-WOTUS PROTECTED SURFACE WATERS

R18-11-201. ~~Repealed~~ Definitions

The following terms apply to this Article:

1. "Acute toxicity" means toxicity involving a stimulus severe enough to induce a rapid response. In aquatic toxicity tests, an effect observed in 96 hours or less is considered acute.
2. "Agricultural irrigation AZ (AgI AZ)" means the use of a non-WOTUS protected surface water for crop irrigation.
3. "Agricultural livestock watering AZ (AgL AZ)" means the use of a non-WOTUS protected surface water as a water supply for consumption by livestock.
4. "Aquatic and wildlife AZ (cold water) (A&Wc AZ)" means the use of a non-WOTUS protected surface water by animals, plants, or other cold-water organisms, generally occurring at an elevation greater than 5000 feet, for habitation, growth, or propagation.

5. “Aquatic and wildlife AZ (warm water) (A&Ww AZ)” means the use of a non-WOTUS protected surface water by animals, plants, or other warm-water organisms, generally occurring at an elevation less than 5000 feet, for habitation, growth, or propagation.
6. “Assimilative capacity” means the difference between the baseline water quality concentration for a pollutant and the most stringent applicable water quality criterion for that pollutant.
7. “Complete Mixing” means the location at which concentration of a pollutant across a transect of a surface water differs by less than five percent.
8. “Criteria” means elements of water quality standards expressed as pollutant concentrations, levels, or narrative statements representing a water quality that supports a designated use.
9. “Critical flow conditions of the discharge” means the hydrologically based discharge flow averages that the director uses to calculate and implement applicable water quality criteria to a mixing zone’s receiving water as follows:
   a. For acute aquatic water quality standard criteria, the discharge flow critical condition is represented by the maximum one-day average flow analyzed over a reasonably representative timeframe.
   b. For chronic aquatic water quality standard criteria, the discharge flow critical flow condition is represented by the maximum monthly average flow analyzed over a reasonably representative timeframe.
   c. For human health-based water quality standard criteria, the discharge flow critical condition is the long-term arithmetic mean flow, averaged over several years so as to simulate long-term exposure.
10. “Critical flow conditions of the receiving water” means the hydrologically based receiving water low flow averages that the director uses to calculate and implement applicable water quality criteria:
    a. For acute aquatic water quality standard criteria, the receiving water critical condition is represented as the lowest one-day average flow event expected to occur once every ten years, on average (1Q10).
    b. For chronic aquatic water quality standard criteria, the receiving water critical flow condition is represented as the lowest seven-consecutive-day average flow expected to occur once every 10 years, on average (7Q10), or
    c. For human health-based water quality standard criteria, in order to simulate long-term exposure, the receiving water critical flow condition is the harmonic mean flow.
11. “Designated use” means a use specified on the Protected Surface Waters List for a non-WOTUS protected surface water.
12. “Domestic water source AZ (DWS AZ)” means the use of a non-WOTUS protected surface water as a source of potable water. Treatment of a surface water may be necessary to yield a finished water suitable for human consumption.
13. “Fish consumption AZ (FC AZ)” means the use of a non-WOTUS protected surface water by humans for harvesting aquatic organisms for consumption. Harvestable aquatic organisms include, but are not limited to, fish, clams, turtles, crayfish, and frogs.
14. “Full-body contact AZ (FBC AZ)” means the use of a non-WOTUS protected surface water for swimming or other recreational activity that causes the human body to come into direct contact with the water to the point of complete submergence. The use is such that ingestion of the water is likely, and sensitive body organs, such as the eyes, ears, or nose, may be exposed to direct contact with the water.

15. “Geometric mean” means the nth root of the product of n items or values. The geometric mean is calculated using the following formula:

$$GM_y = \sqrt[n]{(Y_1)(Y_2)(Y_3)(Y_n)}$$

16. “Hardness” means the sum of the calcium and magnesium concentrations, expressed as calcium carbonate (CaCO3) in milligrams per liter.
17. “Mixing zone” means an area or volume of a surface water that is contiguous to a point source discharge where dilution of the discharge takes place.
18. “Non-WOTUS protected surface water” means a protected surface water designated in Table A of R18-11-216 or added to the PSWL by an emergency action authorized by A.R.S. §49-221(G)(7) that is not a WOTUS.
19. “Oil” means petroleum in any form, including crude oil, gasoline, fuel oil, diesel oil, lubricating oil, or sludge.
20. “Partial-body contact AZ (PBC AZ)” means the recreational use of a non-WOTUS protected surface water that may cause the human body to come into direct contact with the water, but normally not to the point of complete submergence (for example, wading or boating). The use is such that ingestion of the water is not likely and, sensitive body organs, such as the eyes, ears, or nose, will not normally be exposed to direct contact with the water.
21. “Pollutant” means fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and mining, industrial, municipal, and agricultural wastes or any other liquid, solid, gaseous, or hazardous substance.
22. “Practical quantitation limit” means the lowest level of quantitative measurement that can be reliably achieved during a routine laboratory operation.
23. “Recharge Project” means a facility necessary or convenient to obtain, divert, withdraw, transport, exchange, deliver, treat, or store water to infiltrate or reintroduce that water into the ground.
24. “Toxic” means a pollutant or combination of pollutants, that after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in the organism or its offspring.
25. “Urban lake” means a manmade lake within an urban landscape.
26. “Wastewater” does not mean:
    a. Stormwater,
    b. Discharges authorized under the De Minimus General Permit,
    c. Other allowable non-stormwater discharges permitted under the Construction General Permit or the Multi-sector General Permit, or

d. Stormwater discharges from a municipal storm sewer system (MS4) containing incidental amounts of non-stormwater that the MS4 is not required to prohibit.

27. "Wetland" means, for the purposes of non-WOTUS protected surface waters, an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
28. "WOTUS" means waters of the state that are also navigable waters as defined by Section 502(7) of the Clean Water Act.
29. "WOTUS protected surface water" means a protected surface water that is a WOTUS.
30. "Zone of initial dilution" means a small area in the immediate vicinity of an outfall structure in which turbulence is high and causes rapid mixing with the surrounding water.

R18-11-202. ~~Repealed~~ Applicability

A. The water quality standards prescribed in this Article apply to non-WOTUS protected surface waters.

B. The water quality standards prescribed in this Article do not apply to the following:

1. A waste treatment system, including an impoundment, pond, lagoon, or constructed wetland that is part of the waste treatment system;
2. A man-made surface impoundment and any associated ditch and conveyance used in the extraction, beneficiation, or processing of metallic ores including:
   a. A pit,
   b. Pregnant leach solution pond
   c. Raffinate pond,
   d. Tailing impoundment,
   e. Decant pond,
   f. Pond or a sump in a mine put associated with dewatering activity,
   g. Pond holding water that has come into contact with a process or product that is being held for recycling,
   h. Spill or catchment pond, or
   i. A pond used for onsite remediation
3. A man-made cooling pond that is neither created in a surface water nor results from the impoundment of a surface water; or
4. A surface water located on tribal lands.
5. WOTUS Protected Surface Waters

R18-11-203. ~~Repealed~~ Designated Uses for Non-WOTUS Protected Surface Waters

A. The designated uses for specific non-WOTUS protected surface waters are listed in the Protected Surface Waters List in this article. The designated uses that may be assigned to a non-WOTUS protected surface water are:

1. Full-body contact AZ,
2. Partial-body contact AZ,

3. Domestic water source AZ,
4. Fish consumption AZ,
5. Aquatic and wildlife AZ (cold water),
6. Aquatic and wildlife AZ (warm water),
7. Agricultural irrigation AZ, and
8. Agricultural livestock watering AZ.

B. Numeric water quality criteria to maintain and protect water quality for the designated uses assigned to non-WOTUS protected surface waters are prescribed in R18-11-215. Narrative water quality standards to protect non-WOTUS protected surface waters are prescribed in R18-11-214.

C. If a non-WOTUS protected surface water has more than one designated use listed in the Protected Surface Waters List, the most stringent water quality criterion applies.

D. The Director shall revise the designated uses of a non-WOTUS protected surface water if water quality improvements result in a level of water quality that permits a use that is not currently listed as a designated use in the Protected Surface Waters List.

E. The Director may remove a designated use or adopt a subcategory of a designated use that requires less stringent water quality criteria through a rulemaking action for any of the following reasons:

1. A naturally-occurring pollutant concentration prevents the attainment of the use;
2. A human-caused condition or source of pollution prevents the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;
3. A dam, diversion, or other type of hydrologic modification precludes the attainment of the use, and it is not feasible to restore the non-WOTUS protected surface water to its original condition or to operate the modification in a way that would result in attainment of the use;
4. A physical condition related to the natural features of the surface water, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, precludes attainment of an aquatic life designated use.

R18-11-204. ~~Repealed~~ Interim, Presumptive Designated Uses

A. The following water quality standards apply to a non-WOTUS protected surface water that is not listed on the Protected Surface Waters List but is added on an emergency basis pursuant to A.R.S. § 49-221(G)(7):

1. The aquatic and wildlife AZ (cold water use applies to a non-WOTUS protected surface water above 5000 feet in elevation;
2. The aquatic and wildlife AZ (warm water) applies to a non-WOTUS protected surface water below 5000 feet in elevation;
3. The full-body contact AZ use applies to a non-WOTUS protected surface water if the Director makes a determination that the non-WOTUS protected surface water is used by humans for swimming or other recreational activity that causes the human body to come into direct contact with the water to the point of complete submergence. The use is such that

ingestion of the water is likely and sensitive body organs, such as the eyes, ears, or nose, may be exposed to direct contact with the water.

4. The partial-body contact AZ use applies to a non-WOTUS protected surface water if the Director makes a determination that the non-WOTUS protected surface water is used by humans in a way that may cause the human body to come into direct contact with the water, but normally not to the point of complete submergence (for example, wading or boating). The use is such that ingestion of the water is not likely and sensitive body organs, such as the eyes, ears, or nose, will not normally be exposed to direct contact with the water.
5. The fish consumption AZ use applies to a non-WOTUS protected surface water if the Director makes a determination that the non-WOTUS protected surface water is used by humans for harvesting aquatic organisms for consumption. Harvestable aquatic organisms include, but are not limited to, fish, clams, turtles, crayfish, and frogs.
6. The domestic water source AZ use applies to a non-WOTUS protected surface water if the Director makes a determination that the non-WOTUS protected surface water is used by humans as a source of potable water.
7. The agricultural irrigation AZ use applies to a non-WOTUS protected surface water if the Director makes a determination that the non-WOTUS protected surface water is used for crop irrigation.
8. The agricultural livestock watering AZ use applies to any non-WOTUS protected surface water if the Director makes a determination that the non-WOTUS protected surface water is used as a water supply for consumption by livestock.

R18-11-205. ~~Repealed~~ Analytical Methods

A. A person conducting an analysis of a sample taken to determine compliance with a water quality standard shall use an analytical method prescribed in A.A.C. R9-14-610 or an alternative method approved under A.A.C. R9-14-610(C).

B. A test result from a sample taken to determine compliance with a water quality standard is valid only if the sample is analyzed by a laboratory that is licensed by the Arizona Department of Health Services, an out-of-state laboratory licensed under A.R.S. § 36-495.14, or a laboratory exempted under A.R.S. § 36-495.02, for the analysis performed.

R18-11-206. ~~Repealed~~ Mixing Zones

A. The Director may establish a mixing zone for a point source discharge to a non-WOTUS protected surface water as a condition of an individual AZPDES permit on a pollutant-by-pollutant basis. A mixing zone is prohibited where there is no water for dilution, or as prohibited pursuant to subsection (H).

B. The owner or operator of a point source seeking the establishment of a mixing zone shall submit a request to the Director for a mixing zone as part of an application for an AZPDES permit. The request shall include:

1. An identification of the pollutant for which the mixing zone is requested;
2. A proposed outfall design;
3. A definition of the boundary of the proposed mixing zone. For purposes of this subsection, the boundary of a mixing zone is where complete mixing occurs; and
4. A complete and detailed description of the existing physical, biological, and chemical conditions of the receiving water and the predicted impact of the proposed mixing zone on those conditions. The description shall also address the factors

listed in subsection (D) that the Director must consider when deciding to grant or deny a request and shall address the mixing zone requirements in subsection (H).

C. The Director shall consider the following factors when deciding whether to grant or deny a request for a mixing zone:

1. The assimilative capacity of the receiving water;
2. The likelihood of adverse human health effects;
3. The location of drinking water plant intakes and public swimming areas;
4. The predicted exposure of biota and the likelihood that resident biota will be adversely affected;
5. Bioaccumulation;
6. Whether there will be acute toxicity in the mixing zone, and, if so, the size of the zone of initial dilution;
7. The known or predicted safe exposure levels for the pollutant for which the mixing zone is requested;
8. The size of the mixing zone;
9. The location of the mixing zone relative to biologically sensitive areas in the surface water;
10. The concentration gradient of the pollutant within the mixing zone;
11. Sediment deposition;
12. The potential for attracting aquatic life to the mixing zone; and
13. The cumulative impacts of other mixing zones and other discharges to the surface water.

D. Director determination.

1. The Director shall deny a request to establish a mixing zone if an applicable water quality standard will be violated outside the boundaries of the proposed mixing zone.
2. If the Director approves the request to establish a mixing zone, the Director shall establish the mixing zone as a condition of an AZPDES permit. The Director shall include any mixing zone condition in the AZPDES permit that is necessary to protect human health and the designated uses of the surface water.

E. Any person who is adversely affected by the Director's decision to grant or deny a request for a mixing zone may appeal the decision under A.R.S. § 49-321 et seq. and A.R.S. § 41-1092 et seq.

F. The Director shall reevaluate a mixing zone upon issuance, reissuance, or modification of the AZPDES permit for the point source or a modification of the outfall structure.

G. Mixing zone requirements.

1. A mixing zone shall be as small as practicable in that it shall not extend beyond the point in the waterbody at which complete mixing occurs under the critical flow conditions of the discharge and of the receiving water.
2. The total horizontal area allocated to all mixing zones on a lake shall not exceed 10 percent of the surface area of the lake.
3. Adjacent mixing zones in a lake shall not overlap or be located closer together than the greatest horizontal dimension of the largest mixing zone.
4. The design of any discharge outfall shall maximize initial dilution of the wastewater in a surface water.

5. The size of the zone of initial dilution in a mixing zone shall prevent lethality to organisms passing through the zone of initial dilution. The mixing zone shall prevent acute toxicity and lethality to organisms passing through the mixing zone.

H. The Director shall not establish a mixing zone in an AZPDES permit for the following persistent, bioaccumulative pollutants:

1. Chlordane,
2. DDT and its metabolites (DDD and DDE),
3. Dieldrin,
4. Dioxin,
5. Endrin,
6. Endrin aldehyde,
7. Heptachlor,
8. Heptachlor epoxide,
9. Lindane,
10. Mercury,
11. Polychlorinated biphenyls (PCBs), and
12. Toxaphene.

R18-11-207. ~~Repealed~~ Natural background

Where the concentration of a pollutant exceeds a water quality standard and the exceedance is caused solely by naturally occurring conditions, the exceedance shall not be considered a violation of the water quality standard.

R18-11-208. ~~Repealed~~ Schedules of Compliance

A compliance schedule in an AZPDES permit shall require the permittee to comply with a discharge limitation based upon a new or revised water quality standard as soon as possible to achieve compliance. The permittee shall demonstrate that the point source cannot comply with a discharge limitation based upon the new or revised water quality standard through the application of existing water pollution control technology, operational changes, or source reduction. In establishing a compliance schedule, the Director shall consider:

1. How much time the permittee has already had to meet any effluent limitations under a prior permit;
2. The extent to which the permittee has made good faith efforts to comply with the effluent limitations and other requirements in a prior permit;
3. Whether treatment facilities, operations, or measures must be modified to meet the effluent limitations;
4. How long any necessary modifications would take to implement; and
5. Whether the permittee would be expected to use the same treatment facilities, operations or other measures to meet the effluent limitations as it would have used to meet the effluent limitations in a prior permit.

R18-11-209. ~~Repealed~~ Variances

A. Upon request, the Director may establish, by rule, a discharger-specific or water segment(s)-specific variance from a water quality standard if requirements pursuant to this Section are met.

B. A person who requests a variance must demonstrate all of the following information:

1. Identification of the specific pollutant and water quality standard for which a variance is sought.
2. Identification of the receiving surface water segment or segments to which the variance would apply.
3. A detailed discussion of the need for the variance, including the reasons why compliance with the water quality standard cannot be achieved over the term of the proposed variance, and any other useful information or analysis to evaluate attainability.
4. A detailed description of proposed interim discharge limitations and pollutant control activities that represent the highest level of treatment achievable by a point source discharger or dischargers during the term of the variance.
5. Documentation that the proposed term is only as long as necessary to achieve compliance with applicable water quality standards.
6. Documentation that is appropriate to the type of designated use to which the variance would apply as follows:
    a. For a water quality standard variance documentation must include a demonstration of at least one of the following factors that preclude attainment of the use during the term of the variance:
        i. Naturally occurring pollutant concentrations prevent attainment of the use;
        ii. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met;
        iii. That human-caused conditions or sources of pollution prevent the attainment of the water quality standard for which the variance is sought and either (1) it is not possible to remedy the conditions or sources of pollution or (2) remedying the human-caused conditions would cause more environmental damage to correct than to leave in place;
        iv. Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification n a way that would result in the attainment of the use;
        v. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses;
        vi. Actions necessary to facilitate lake, wetland, or stream restoration through dam removal or other significant reconfiguration activities preclude attainment of the designated use and criterion while the actions are being implemented.
7. For a waterbody segment(s)-specific variance, the following information is required before the Director may issue a variance, in addition to all other required documentation pursuant to this Section:
    a. Identification and documentation of any cost-effective and reasonable best management practices for nonpoint source controls related to the pollutant(s) or water quality parameter(s) and water body or waterbody segment(s)

specified in the variance that could be implemented to make progress towards attaining the underlying designated use and criterion; and

b. If any variance pursuant to subsection (B)(7)(a) previously applied to the water body or waterbody segment(s), documentation must also demonstrate whether and to what extent best management practices for nonpoint source controls were implemented to address the pollutant(s) or water quality parameter(s) subject to the water quality variance and the water quality progress achieved.

8. For a discharger-specific variance, the following information is required before the Director may issue a variance, in addition to all other required documentation pursuant to this Section:

a. Identification of the permittee subject to the variance.

C. The Director shall consider the following factors when deciding whether to grant or deny a variance request:

1. Bioaccumulation,
2. The predicted exposure of biota and the likelihood that resident biota will be adversely affected,
3. The known or predicted safe exposure levels for the pollutant for which the variance is requested, and
4. The likelihood of adverse human health effects.

D. The variance shall represent the highest attainable condition of the water body or water body segment applicable throughout the term of the variance.

E. A variance shall not result in any lowering of the currently attained ambient water quality, unless the variance is necessary for restoration activities, consistent with subsection (B)(6)(a)(vi). The Director must specify the highest attainable condition of the water body or waterbody segment as a quantifiable expression of one of the following:

1. The highest attainable interim criterion,
2. The interim effluent condition that reflects the greatest pollutant reduction achievable.

F. A variance shall not modify the underlying designated use and criterion. A variance is only a time limited exception to the underlying standard. For discharge-specific variances, other point source dischargers to the surface water that are not granted a variance shall still meet all applicable water quality standards.

G. Point source discharges shall meet all other applicable water quality standards for which a variance is not granted

H. The term of the water quality variance may only be as long as necessary to achieve the highest attainable condition and must be consistent with the supporting documentation in subsection (E).

I. The Director shall periodically, but not more than every 5 years, reevaluate whether each variance continues to represent the highest attainable condition. Comment on the variance shall be considered regarding whether the variance continues to represent the highest attainable condition during each rulemaking for this Article. If the Director determines that the requirements of the variance do not represent the highest attainable condition, then the Director shall modify or repeal the variance during the rulemaking.

J. If the variance is modified by rulemaking, the requirements of the variance shall represent the highest attainable condition at the time of initial adoption of the variance, or the highest attainable condition identified during the current reevaluation, whichever is more stringent.

K. Upon expiration of a variance, point source dischargers shall comply with the water quality standard.

R18-11-210. ~~Repealed~~ Site Specific Standards

A. The Director shall adopt a site-specific standard by rule.

B. The Director may adopt a site-specific standard based upon a request or upon the Director's initiative for any of the following reasons:

1. Local physical, chemical, or hydrological conditions of a non-WOTUS protected surface water such as pH, hardness, fate and transport, or temperature alters the biological availability or toxicity of a pollutant;
2. The sensitivity of resident aquatic organisms that occur in a non-WOTUS protected surface water to a pollutant differs from the sensitivity of the species used to derive the numeric water quality standards to protect aquatic life in R18-11-215;
3. Resident aquatic organisms that occur in a non-WOTUS protected surface water represent a narrower mix of species than those in the dataset used by ADEQ to derive numeric water quality standards to protect aquatic life in R18-11-215;
4. The natural background concentration of a pollutant is greater than the numeric water quality standard to protect aquatic life prescribed in R18-11-215. "Natural background" means the concentration of a pollutant in a non-WOTUS protected surface water due only to non-anthropogenic sources; or
5. Other factors or combination of factors that upon review by the Director warrant changing a numeric water quality standard for a non-WOTUS protected surface water.

C. Site-specific standard by request. To request that the Director adopt a site-specific standard, a person must conduct a study to support the development of a site-specific standard using a scientifically defensible procedure.

1. Before conducting the study, a person shall submit a study outline to the Director for approval that contains the following elements:
   a. Identifies the pollutant;
   b. Describes the reach's boundaries;
   c. Describes the hydrologic regime of the waterbody;
   d. Describes the scientifically defensible procedure, which can include relevant aquatic life studies, ecological studies, laboratory tests, biological translators, fate and transport models, and risk analyses;
   e. Describes and compares the taxonomic composition, distribution and density of the aquatic biota within the reach to a reference reach and describes the basis of any major taxonomic differences;
   f. Describes the pollutant's effect on the affected species or appropriate surrogate species and on the other designated uses listed for the reach;
   g. Demonstrates that all designated uses are protected; and
   h. A person seeking to develop a site-specific standard based on natural background may use statistical or modeling approaches to determine natural background concentration.

R18-11-211. ~~Repealed~~ Enforcement of Non-permitted Discharges to Non-WOTUS Protected Surface Waters

A. The Department may establish a numeric water quality standard at a concentration that is below the practical quantitation limit. Therefore, in enforcement actions pursuant to subsection (B), the water quality standard is enforceable at the practical quantitation limit.

B. Except for chronic aquatic and wildlife criteria, for non-permitted discharge violations, the Department shall determine compliance with numeric water quality standard criteria from the analytical result of a single sample, unless additional samples are required under this article. For chronic aquatic and wildlife criteria, compliance for non-permitted discharge violations shall be determined from the geometric mean of the analytical results of the last four samples taken at least 24 hours apart. For the purposes of this Section, a "non-permitted discharge violation" does not include a discharge regulated under an AZPDES permit.

R18-11-212. ~~Repealed~~ Statements of Intent and Limitations on the Reach of Article 2

A. Nothing in this Article prohibits fisheries management activities by the Arizona Game and Fish Department or the U.S. Fish and Wildlife Service. This Article does not exempt fish hatcheries from AZPDES permit requirements.

B. Nothing in this Article prevents the routine physical or mechanical maintenance of canals, drains, and the urban lakes identified as non-WOTUS protected surface waters on the Protected Surface Waters List. Physical or mechanical maintenance includes dewatering, lining, dredging, and the physical, biological, or chemical control of weeds and algae. Increases in turbidity that result from physical or mechanical maintenance activities are permitted in canals, drains, and the urban lakes identified on the Protected Surface Waters List.

C. Increases in turbidity that result from the routine physical or mechanical maintenance of a dam or flood control structure are not violations of this Article.

D. Nothing in this Article requires the release of water from a dam or a flood control structure.

R18-11-213. ~~Repealed~~ Procedures for Determining Economic, Social, and Environmental Cost and Benefits.

A. The Director shall perform an economic, social, and environmental cost and benefits analysis that shows the benefits outweigh the costs before conducting any of the following rulemaking actions:

1. Adopting a water quality standard that applies to non-WOTUS protected surface waters at a particular level or for a particular water category of non-WOTUS protected surface waters;
2. Adding a non-WOTUS protected surface water to the Protected Surface Waters List when the conditions of A.R.S. § 49-221(G)(4) apply; or
3. Removing a non-WOTUS protected surface water from the Protected Surface Waters List when the conditions of A.R.S. § 49-221(G)(6) apply.

B. The economic, social, and environmental cost and benefit analysis must include:

1. A justification of the valuation methodology used to quantify the costs or benefits of the rulemaking action;
2. A reference to any study relevant to the economic, social, and environmental cost and benefit analysis that the agency reviewed and proposes either to rely on or not to rely on in its evaluation of the costs and benefits of the rulemaking action;

3. A description of any data on which an economic, social, and environmental cost and benefits analysis is based and an explanation of how the data was obtained and why the data is acceptable data.
4. A description of the probable impact of the rulemaking on any existing AZPDES permits that are impacted by the rulemaking action;
5. A description of the probable amount of additional AZPDES permits that will be required for known and ongoing point-source discharges after the rulemaking is completed that otherwise would not have been required if the Director did not undertake the rulemaking action; and
6. The administrative and other costs to ADEQ associated with the proposed rulemaking.

C. The Director shall publish a copy of the economic, social, and environmental cost and benefits analysis to the agency website prior to filing any rulemaking materials during any of the rulemaking actions listed in subsection (A) of this rule.

D. If for any reason enough data is not reasonably available to comply with the requirements of subsection (B) of this section, the agency shall explain the limitations of the data and the methods that were employed in the attempt to obtain the data and shall characterize the probable impacts in qualitative terms.

E. The Director is not required to prepare the economic, social, and environmental cost and benefits analysis required by this rule when:
1. Adding or removing a WOTUS-protected surface water from the Protected Surface Waters List; or
2. Adding a water to the Protected Surface Waters List on an emergency basis pursuant to A.R.S. § 49-221(G)(7).

R18-11-214. ~~Repealed~~ Narrative Water Quality Standards for Non-WOTUS Protected Surface Waters

A. A non-WOTUS protected surface water shall not contain pollutants in amounts or combinations that:
1. Settle to form bottom deposits that inhibit or prohibit the habitation, growth, or propagation of aquatic life;
2. Cause objectionable odor in the area in which the non-WOTUS protected surface water is located;
3. Cause off-taste or odor in drinking water;
4. Cause off-flavor in aquatic organisms;
5. Are toxic to humans, animals, plants, or other organisms;
6. Cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth, or propagation of other aquatic life or that impair recreational uses;
7. Cause or contribute to a violation of an aquifer water quality standard prescribed in R18-11-405 or R18-11-406; or
8. Change the color of the non-WOTUS protected surface water from natural background levels of color.

B. A non-WOTUS protected surface water shall not contain oil, grease, or any other pollutant that floats as debris, foam, or scum; or that causes a film or iridescent appearance on the surface of the water; or that causes a deposit on a shoreline, bank, or aquatic vegetation. The discharge of lubricating oil or gasoline associated with the normal operation of a recreational watercraft is not a violation of this narrative standard

C. A non-WOTUS protected surface water shall not contain a discharge of suspended solids in quantities or concentrations that interfere with the treatment processes at the nearest downstream potable water treatment plant or substantially increase the cost of handling solids produced at the nearest downstream potable water treatment plant.

R18-11-215. Numeric Water Quality Standards for Non-WOTUS Protected Surface Waters

A. *E. coli* bacteria. The following water quality standards for *Escherichia coli (E. coli)* are expressed in colony-forming units per 100 milliliters of water (cfu / 100 ml) or as a Most Probable Number (MPN):

E. coli	**FBC AZ**	**PBC AZ**
Geometric mean (minimum of four samples in 30 days)	126	126
Statistical threshold value	410	576

B. pH. The following water quality standards for non-WOTUS protected surface waters pH are expressed in standard units:

pH	**DWS AZ**	**FBC AZ, PBC AZ, A&Ww AZ, A&Wc AZ**	**AgI AZ**	**AgL AZ**
Maximum	9.0	9.0	9.0	9.0
Minimum	5.0	6.5	4.5	6.5

C. The maximum allowable increase in ambient water temperature, due to a thermal discharge is as follows:

A&Ww AZ	**A&Wc AZ**
3.0° C	1.0° C

D. Suspended sediment concentration.

1. The following water quality standards for suspended sediment concentration, expressed in milligrams per liter (mg/L), are expressed as a median value determined from a minimum of four samples collected at least seven days apart:
2. The Director shall not use the results of a suspended sediment concentration sample collected during or within 48 hours after a local storm event to determine the median value.

A&Wc AZ	**A&Ww AZ**

25	80

E. Dissolved oxygen. A non-WOTUS protected surface water meets the water quality standard for dissolved oxygen when either:

1. The percent saturation of dissolved oxygen is equal to or greater than 90 percent, or
2. The single sample minimum concentration for the designated use, as expressed in milligrams per liter (mg/L) is as follows:

Designated Use	**Single sample minimum concentration in mg/L**
A&Ww AZ	6.0
A&Wc AZ	7.0

The single sample minimum concentration is the same for the designated use in a lake, but the sample must be taken from a depth no greater than one meter.

F. The tables in this subsection prescribe water quality criteria for individual pollutants by designated use:

Table 1. Water Quality Criteria by Designated Use (see footnote)

Parameter	CAS NUMBER	DWS AZ (µg/L)	FC AZ (µg/L)	FBC AZ (µg/L)	PBC AZ (µg/L)	A&Wc AZ Acute (µg/L)	A&Wc AZ Chronic (µg/L)	A&Ww AZ Acute (µg/L)	A&Ww AZ Chronic (µg/L)	AgI AZ (µg/L)	AgL AZ (µg/L)
Acenaphthene	83329	420	198	56,000	56,000	850	550	850	550		
Acrolein	107028	3.5	1.9	467	467	3	3	3	3		
Acrylonitrile	107131	0.06	0.2	3	37,333	3,800	250	3,800	250		
Alachlor	15972608	2		9,333	9,333	2,500	170	2,500	170		
Aldrin	309002	0.002	0.00005	0.08	28	3		3		0.003	See (b)
Alpha Particles (Gross) Radioactivity		15 pCi/L See (h)									

Ammonia	7664417					See (e) & Tables 11 (present) & 14 (absent)	See (e) & Tables 13 (present) & 17 (absent)	See (e) & Tables 12 (present) & 15 (absent)	See (e) & Tables 13 (present) & 16 (absent)		
Anthracene	120127	2,100	74	280,000	280,000						
Antimony	7440360	6 T	640 T	747 T	747 T	88 D	30 D	88 D	30 D		
Arsenic	7440382	10 T	80 T	30 T	280 T	340 D	150 D	340 D	150 D	2,000 T	200 T
Asbestos	1332214	See (a)									
Atrazine	1912249	3		32,667	32,667						
Barium	7440393	2,000 T		98,000 T	98,000 T						
Benz(a)anthracene	56553	0.005	0.02	0.2	0.2						
Benzene	71432	5	140	93	3,733	2,700	180	2,700	180		
Benzo[b]fluoranthene Benzfluoranthene	205992	0.005	0.02	1.9	1.9						
Benzidine	92875	0.0002	0.0002	0.01	2,800	1,300	89	1,300	89	0.01	0.01
Benzo(a)pyrene	50328	0.2	0.02	0.2	0.2						
Benzo(k)fluoranthene	207089	0.005	0.02	1.9	1.9						
Beryllium	7440417	4 T	84 T	1,867 T	1,867 T	65 D	5.3 D	65 D	5.3 D		
Beta particles and photon emitters		4 millirems / year See (i)									
Bis(2-chloroethyl) ether	111444	0.03	0.5	1	1	120,000	6,700	120,000	6,700		
Bis(2-chloroisopropyl) ether	108601	280	3,441	37,333	37,333						
Boron	7440428	1,400 T		186,667 T	186,667 T					1,000 T	
Bromodichloromethane	75274	TTHM See (g)	17	TTHM	18,667						
4-Bromophenyl phenyl ether	101553					180	14	180	14		
Bromoform	75252	TTHM See (g)	133	180	18,667	15,000	10,000	15,000	10,000		
Bromomethane	74839	9.8	299	1,307	1,307	5,500	360	5,500	360		
Butyl benzyl phthalate	85687	1,400	386	186,667	186,667	1,700	130	1,700	130		
Cadmium	7440439	5 T	84 T	700 T	700 T	See (d) &	See (d) &	See (d) &	See (d) &	50	50

						Table 2	Table 3	Table 2	Table 3		
Carbaryl	63252					2.1	2.1	2.1	2.1		
Carbofuran	1563662	40		4,667	4,667	650	50	650	50		
Carbon tetrachloride	56235	5	2	11	980	18,000	1,100	18,000	1,100		
Chlordane	57749	2	0.0008	4	467	2.4	0.004	2.4	0.2		
Chlorine (total residual)	7782505	4,000		4000	4000	19	11	19	11		
Chlorobenzene	108907	100	1,553	18,667	18,667	3,800	260	3,800	260		
2-Chloroethyl vinyl ether	110758					180,000	9,800	180,000	9,800		
Chloroform	67663	TTHM See (g)	470	230	9,333	14,000	900	14,000	900		
p-Chloro-m-cresol	59507					15	4.7	15	4.7		
Chloromethane	74873					270,000	15,000	270,000	15,000		
beta-Chloronaphthalene	91587	560	317	74,667	74,667						
2-Chlorophenol	95578	35	30	4,667	4,667	2,200	150	2,200	150		
Chloropyrifos	2921882	21		2,800	2,800	0.08	0.04	0.08	0.04		
Chromium III	16065831		75,000 T	1,400,000 T	1,400,000 T	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4	See (d) & Table 4		
Chromium VI	18540299	21 T	150 T	2,800 T	2,800 T	16 D	11 D	16 D	11 D		
Chromium (Total)	7440473	100 T								1,000	1,000
Chrysene	218019	0.005	0.02	19	19						
Copper	7440508	1,300 T		1,300 T	1,300 T	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	See (d) & Table 5	5,000 T	500 T
Cyanide (as free cyanide)	57125	200 T	16,000 T	18,667 T	18,667 T	22 T	5.2 T	41 T	9.7 T		200 T
Dalapon	75990	200	8,000	28,000	28,000						
DDT and its breakdown products	50293	0.1	0.0002	14	467	1.1	0.001	1.1	0.001	0.001	0.001
Demeton	8065483						0.1		0.1		
Diazinon	333415					0.17	0.17	0.17	0.17		
Dibenz (ah) anthracene	53703	0.005	0.02	1.9	1.9						
Dibromochloromethane	124481	TTHM See (g)	13	TTHM	18,667						
1,2-Dibromo-3-chloropro-pane	96128	0.2		2,800	2,800						

1,2-Dibromoethane	106934	0.05		8,400	8,400						
Dibutyl phthalate	84742	700	899	93,333	93,333	470	35	470	35		
1,2-Dichlorobenzene	95501	600	205	84,000	84,000	790	300	1,200	470		
1,3-Dichlorobenzene	541731					2,500	970	2,500	970		
1,4-Dichlorobenzene	106467	75	5755	373,333	373,333	560	210	2,000	780		
3,3'-Dichlorobenzidine	91941	0.08	0.03	3	3						
1,2-Dichloroethane	107062	5	37	15	186,667	59,000	41,000	59,000	41,000		
1,1-Dichloroethylene	75354	7	7,143	46,667	46,667	15,000	950	15,000	950		
1,2-cis-Dichloroethylene	156592	70		70	70						
1,2-trans-Dichloroethylene	156605	100	10,127	18,667	18,667	68,000	3,900	68,000	3,900		
Dichloromethane	75092	5	593	190	56,000	97,000	5,500	97,000	5,500		
2,4-Dichlorophenol	120832	21	59	2,800	2,800	1,000	88	1,000	88		
2,4-Dichlorophenoxyacetic acid (2,4-D)	94757	70		9,333	9,333						
1,2-Dichloropropane	78875	5	17,518	84,000	84,000	26,000	9,200	26,000	9,200		
1,3-Dichloropropene	542756	0.7	42	420	28,000	3,000	1,100	3,000	1,100		
Dieldrin	60571	0.002	0.00005	0.09	47	0.2	0.06	0.2	0.06	0.003	See (b)
Diethyl phthalate	84662	5,600	8,767	746,667	746,667	26,000	1,600	26,000	1,600		
Di (2-ethylhexyl) adipate	103231	400		560,000	560,000						
Di (2-ethylhexyl) phthalate	117817	6	3	100	18,667	400	360	400	360		
2,4-Dimethylphenol	105679	140	171	18,667	18,667	1,000	310	1,000	310		
Dimethyl phthalate	131113					17,000	1,000	17,000	1,000		
4,6-Dinitro-o-cresol	534521	28	582	3,733	3,733	310	24	310	24		
2,4-Dinitrophenol	51285	14	1,067	1,867	1,867	110	9.2	110	9.2		
2,4-Dinitrotoluene	121142	14	421	1,867	1,867	14,000	860	14,000	860		
2,6-Dinitrotoluene	606202	0.05		2	3,733						
Di-n-octyl phthalate	117840	2,800		373,333	373,333						
Dinoseb	88857	7		933	933						
1,2-Diphenylhydrazine	122667	0.04	0.2	1.8	1.8	130	11	130	11		
Diquat	85007	20		2,053	2,053						
Endosulfan sulfate	1031078	42	18	5,600	5,600	0.2	0.06	0.2	0.06		
Endosulfan (Total)	115297	42	18	5,600	5,600	0.2	0.06	0.2	0.06		
Endothall	145733	100		18,667	18,667						

Endrin	72208	2	0.06	280	280	0.09	0.04	0.09	0.04	0.004	0.004
Endrin aldehyde	7421934	2				0.09	0.04	0.09	0.04		
Ethylbenzene	100414	700	2,133	93,333	93,333	23,000	1,400	23,000	1,400		
Fluoranthene	206440	280	28	37,333	37,333	2,000	1,600	2,000	1,600		
Fluorene	86737	280	1,067	37,333	37,333						
Fluoride	7782414	4,000		140,000	140,000						
Glyphosate	1071836	700	266,667	93,333	93,333						
Guthion	86500						0.01		0.01		
Heptachlor	76448	0.4	0.00008	0.4	467	0.5	0.004	0.5	0.004		
Heptachlor epoxide	1024573	0.2	0.00004	0.2	12	0.5	0.004	0.5	0.004		
Hexachlorobenzene	118741	1	0.0003	1	747	6	3.7	6	3.7		
Hexachlorobutadiene	87683	0.4	18	18	187	45	8.2	45	8.2		
Hexachlorocyclohexane alpha	319846	0.006	0.005	0.22	7,467	1,600	130	1,600	130		
Hexachlorocyclohexane beta	319857	0.02	0.02	0.78	560	1,600	130	1,600	130		
Hexachlorocyclohexane delta	319868					1,600	130	1,600	130		
Hexachlorocyclohexane gamma (lindane)	58899	0.2	1.8	280	280	1	0.08	1	0.28		
Hexachlorocyclopentadiene	77474	50	580	9,800	9,800	3.5	0.3	3.5	0.3		
Hexachloroethane	67721	2.5	3.3	100	933	490	350	490	350		
Hydrogen sulfide	7783064						2 See (c)		2 See (c)		
Indeno (1,2,3-cd) pyrene	193395	0.05	0.49	1.9	1.9						
Iron	7439896						1,000 D		1,000 D		
Isophorone	78591	37	961	1,500	186,667	59,000	43,000	59,000	43,000		
Lead	7439921	15 T		15 T	15 T	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	See (d) & Table 6	10,000 T	100 T
Malathion	121755	140		18,667	18,667		0.1		0.1		
Manganese	7439965	980		130,667	130,667					10,000	
Mercury	7439976	2 T		280 T	280 T	2.4 D	0.01 D	2.4 D	0.01 D		10 T
Methoxychlor	72435	40		4,667	4,667		0.03		0.03		
Methylmercury	22967926		0.3 mg/kg								
Mirex	2385855	1		187	187		0.001		0.001		

Naphthalene	91203	140	1,524	18,667	18,667	1,100	210	3,200	580		
Nickel	7440020	140 T	4,600 T	28,000 T	28,000 T	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7	See (d) & Table 7		
Nitrate	14797558	10,000		3,733,333	3,733,333						
Nitrite	14797650	1,000		233,333	233,333						
Nitrate + Nitrite		10,000									
Nitrobenzene	98953	3.5	138	467	467	1,300	850	1,300	850		
p-Nitrophenol	100027					4,100	3,000	4,100	3,000		
N-nitrosodimethylamine	62759	0.001	3	0.03	0.03						
N-Nitrosodiphenylamine	86306	7.1	6	290	290	2,900	200	2,900	200		
N-nitrosodi-n-propylamine	621647	0.005	0.5	0.2	88,667						
Nonylphenol	104405					28	6.6	28	6.6		
Oxamyl	23135220	200		23,333	23,333						
Parathion	56382					0.07	0.01	0.07	0.01		
Paraquat	1910425	32		4,200	4,200	100	54	100	54		
Pentachlorophenol	87865	1	1,000	12	28,000	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10	See (e), (j) & Table 10		
Permethrin	52645531	350		46,667	46,667	0.3	0.2	0.3	0.2		
Phenanthrene	85018					30	6.3	30	6.3		
Phenol	108952	2,100	37	280,000	280,000	5,100	730	7,000	1,000		
Picloram	1918021	500	2,710	65,333	65,333						
Polychlorinatedbiphenyls (PCBs)	1336363	0.5	0.00006	2 19	19	2	0.01	2	0.02	0.001	0.001
Pyrene	129000	210	800	28,000	28,000						
Radium 226 + Radium 228		5 pCi/L									
Selenium	7782492	50 T	667 T	4,667 T	4,667 T		2 T		2 T	20 T	50 T
Silver	7440224	35 T	8,000 T	4,667 T	4,667 T	See (d) & Table 8		See (d) & Table 8			
Simazine	112349	4		4,667	4,667						
Strontium	7440246	8 pCi/L									
Styrene	100425	100		186,667	186,667	5,600	370	5,600	370		
Sulfides											

2,3,7,8-Tetrachlorod- ibenzo-p-dioxin (2,3,7,8-TCDD)	1746016	0.00003	5x10-9	0.00003	0.0009	0.01	0.005	0.01	0.005		
1,1,2,2-Tetrachloroethane	79345	0.2	4	7	56,000	4,700	3,200	4,700	3,200		
Tetrachloroethylene	127184	5	261	9,333	9,333	2,600	280	6,500	680		
Thallium	7440280	2 T	7.2 T	75 T	75 T	700 D	150 D	700 D	150 D		
Toluene	108883	1,000	201.000	280,000	280,000	8,700	180	8,700	180		
Toxaphene	8001352	3	0.0003	1.3	933	0.7	0.0002	0.7	0.0002	0.005	0.005
Tributyltin						0.5	0.07	0.5	0.07		
1,2,4-Trichlorobenzene	120821	70	70	9,333	9,333	750	130	1,700	300		
1,1,1-Trichloroethane	71556	200	428,571	1,866,667	1,866,667	2,600	1,600	2,600	1,600	1,000	
1,1,2-Trichloroethane	79005	5	16	25	3,733	18,000	12,000	18,000	12,000		
Trichloroethylene	79016	5	29	280,000	280	20,000	1,300	20,000	1,300		
2,4,6-Trichlorophenol	88062	3.2	2	130	130	160	25	160	25		
2,4,5-Trichlorophenoxy proprionic acid (2,4,5-TP)	93721	50		7,467	7,467						
Trihalomethanes (T)		80									
Tritium	10028178	20,000 pCi/L									
Uranium	7440611	30 D		2,800	2,800						
Vinyl chloride	75014	2	5	2	2,800						
Xylenes (T)	1330207	10,000		186,667	186,667						
Zinc	7440666	2,100 T	5,106 T	280,000 T	280,000 T	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	See (d) & Table 9	10,000 T	25,000 T

Footnotes

a. The asbestos standard is 7 million fibers (longer than 10 micrometers) per liter.

b. The aldrin/dieldrin standard is exceeded when the sum of the two compounds exceeds 0.003 µg/L.

c. In lakes, the acute criteria for hydrogen sulfide apply only to water samples taken from the epilimnion, or the upper layer of a lake or reservoir.

d. Hardness, expressed as mg/L $CaCO_3$, is determined according to the following criteria:

   i. If the receiving water body has an A&Wc or A&Ww designated use, then hardness is based on the hardness of the receiving water body from a sample taken at the same time that the sample for the metal is taken, except that the hardness may not exceed 400 mg/L $CaCO_3$.

ii. The mathematical equations for the hardness-dependent parameter represent the water quality standards. Examples of criteria for the hardness-dependent parameters have been calculated and are presented in separate tables in this rule for the convenience of the user.

e. pH is determined according to the following criteria:

i. If the receiving water has an A&Wc or A&Ww designated use, then pH is based on the pH of the receiving water body from a sample taken at the same time that the sample for pentachlorophenol or ammonia is taken.

ii. The mathematical equations for ammonia represent the water quality standards. Examples of criteria for ammonia have been calculated and are presented in separate tables in this rule for the convenience of the user.

f. Table 1 abbreviations.

i. µg/L = micrograms per liter,

ii. mg/kg = milligrams per kilogram,

iii. pCi/L = picocuries per liter,

iv. D = dissolved,

v. T = total recoverable,

vi. TTHM indicates that the chemical is a trihalomethane.

g. The total trihalomethane (TTHM) standard is exceeded when the sum of these four compounds exceeds 80 µg/L, as a rolling annual average.

h. The concentration of gross alpha particle activity includes radium-226, but excludes radon and uranium.

i. The average annual concentration of beta particle activity and photon emitters from manmade radionuclides shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirems per year.

j. The mathematical equations for the pH-dependent parameters represent the water quality standards. Examples of criteria for the pH-dependent parameters have been calculated and are presented in separate tables in this rule for the convenience of the user.

k. Abbreviations for the mathematical equations are as follows:

e = the base of the natural logarithm and is a mathematical constant equal to 2.71828

LN = is the natural logarithm

CMC = Criterion Maximum Concentration (acute)

CCC= Criterion Continuous Concentration (chronic)

Table 2. Acute Water Quality Standards for Dissolved Cadmium

Aquatic and Wildlife Coldwater AZ		**Aquatic and Wildlife Warm Water AZ**	
Hard. mg/L	**Std. µg/L**	**Hard. mg/L**	**Std. µg/L**
20	0.40	20	2.1

100	1.8	100	9.4
400	6.5	400	34
$e^{(0.9789*LN(Hardness)-3.866)}*(1.136672-LN(Hardness)*0.041838)$		$e^{(0.9789*LN(Hardness)-2.208)}*(1.136672-LN(Hardness)*0.041838)$	

Table 3. Chronic Water Quality Standards for Dissolved Cadmium

Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**
20	0.21
100	0.72
400	2.0
$e^{(0.7977*LN(Hardness)-3.909)}*(1.101672-LN(Hardness)*0.041838)$	

Table 4. Water Quality Standards for Dissolved Chromium III

Acute Aquatic and Wildlife Coldwater AZ and Warmwater AZ		Chronic Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**	**Hard. mg/L**	**Std. µg/L**
20	152	20	19.8
100	570	100	74.1
400	1,773	400	231
$e^{(0.819*LN(Hardness)+3.7256)}*(0.316)$		$e^{(0.819*LN(Hardness)+0.6848)}*(0.86)$	

Table 5. Water Quality Standards for Dissolved Copper

Acute Aquatic and Wildlife Coldwater AZ and Warmwater AZ		Chronic Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**	**Hard. mg/L**	**Std. µg/L**

20	2.9	20	2.3
100	13	100	9.0
400	50	400	29
e(0.9422*LN(Hardness)-1.702)*(0.96)		e(0.8545*LN(Hardness)-1.702)*(0.96)	

Table 6. Water Quality Standards for Dissolved Lead

Acute Aquatic and Wildlife Coldwater AZ and Warmwater AZ		Chronic Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**	**Hard. mg/L**	**Std. µg/L**
20	10.8	20	0.42
100	64.6	100	2.5
400	281	400	10.9
e^(1.273*LN(Hardness)-1.46)*(1.46203-(LN(Hardness))*(0.145712))		e^(1.273*LN(Hardness)-4.705)*(1.46203-(LN(Hardness))*(0.145712))	

Table 7. Water Quality Standards for Dissolved Nickel

Acute Aquatic and Wildlife Coldwater AZ and Warmwater AZ		Chronic Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**	**Hard. mg/L**	**Std. µg/L**
20	120.0	20	13.3
100	468	100	52.0
400	1513	400	168
e(0.846*LN(Hardness)+2.255)*(0.998)		e(0.846*LN(Hardness)+0.0584)*(0.997)	

Table 8. Water Quality Standards for Dissolved Silver

Acute Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**
20	0.20
100	3.2
400	34.9
$e^{(1.72*LN(Hardness)-6.59)*(0.85)}$	

Table 9. Water Quality Standards for Dissolved Zinc

Acute and Chronic Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
Hard. mg/L	**Std. µg/L**
20	30.0
100	117
400	379
$e^{(0.8473*LN(Hardness)+0.884)*(0.978)}$	

Table 10. Water Quality Standards for Pentachlorophenol

Acute Aquatic and Wildlife Coldwater AZ and Warmwater AZ		Chronic Aquatic and Wildlife Coldwater AZ and Warmwater AZ	
pH	**µg/L**	**pH**	**µg/L**
3	0.16	3	0.1
6	3.3	6	2.1
9	67.7	9	42.7
$e^{(1.005*(pH)-4.83)}$		$e^{(1.005*(pH)-5.29)}$	

Table 11. Acute Standards for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Coldwater AZ, Unionid

Mussels Present

For the Aquatic and Wildlife Coldwater AZ uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment.

pH	**Temperature (°C)**																
	0-14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	33	33	32	29	27	25	23	21	19	18	16	15	14	13	12	11	9.9
6.6	31	31	30	28	26	24	22	20	18	17	16	14	13	12	11	10	9.5
6.7	30	30	29	27	24	22	21	19	18	16	15	14	13	12	11	9.8	9
6.8	28	28	27	25	23	21	20	18	17	15	14	13	12	11	10	9.2	8.5
6.9	26	26	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9
7	24	24	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	8	7.3
7.1	22	22	21	20	18	17	15	14	13	12	11	10	9.3	8.5	7.9	7.2	6.7
7.2	20	20	19	18	16	15	14	13	12	11	9.8	9.1	8.3	7.7	7.1	6.5	6
7.3	18	18	17	16	14	13	12	11	10	9.5	8.7	8	7.4	6.8	6.3	5.8	5.3
7.4	15	15	15	14	13	12	11	9.8	9	8.3	7.7	7	6.5	6	5.5	5.1	4.7
7.5	13	13	13	12	11	10	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4
7.6	11	11	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	9.6	9.6	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	3
7.8	8.1	8.1	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4	3.7	3.4	3.2	2.9	2.7	2.5
7.9	6.8	6.8	6.6	6	5.6	5.1	4.7	4.3	4	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8	5.6	5.6	5.4	5	4.6	4.2	3.9	3.6	3.3	3	2.8	2.6	2.4	2.2	2	1.9	1.7
8.1	4.6	4.6	4.5	4.1	3.8	3.5	3.2	3	2.7	2.5	2.3	2.1	2	1.8	1.7	1.5	1.4
8.2	3.8	3.8	3.7	3.5	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	3.1	3.1	3.1	2.8	2.6	2.4	2.2	2	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1	0.96
8.4	2.6	2.6	2.5	2.3	2.1	2	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1	0.93	0.86	0.79
8.5	2.1	2.1	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	0.98	0.9	0.83	0.77	0.71	0.65
8.6	1.8	1.8	1.7	1.6	1.5	1.3	1.2	1.1	1	0.96	0.88	0.81	0.75	0.69	0.63	0.59	0.54
8.7	1.5	1.5	1.4	1.3	1.2	1.1	1	0.94	0.87	0.8	0.74	0.68	0.62	0.57	0.53	0.49	0.45

8.8	1.2	1.2	1.2	1.1	1	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37
8.9	1	1	1	0.93	0.85	0.79	0.72	0.67	0.61	0.56	0.52	0.48	0.44	0.4	0.37	0.34	0.32
9	0.88	0.88	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37	0.34	0.32	0.29	0.27

$$MIN\left(\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}\right),\left(0.7249\times\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)\times\left(23.12\times10^{0.036\times(20-T)}\right)\right)$$

Table 12. Acute Standards for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Warmwater AZ, Unionid Mussels Present

For the Aquatic and Wildlife Warmwater AZ uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment.

	Temperature (°C)																				
pH	**0-10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	51	48	44	41	37	34	32	29	27	25	23	21	19	18	16	15	14	13	12	11	9.9
6.6	49	46	42	39	36	33	30	28	26	24	22	20	18	17	16	14	13	12	11	10	9.5
6.7	46	44	40	37	34	31	29	27	24	22	21	19	18	16	15	14	13	12	11	9.8	9
6.8	44	41	38	35	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.2	8.5
6.9	41	38	35	32	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9
7	38	35	33	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9	7.3
7.1	34	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.3	8.5	7.9	7.2	6.7
7.2	31	29	27	25	23	21	19	18	16	15	14	13	12	11	9.8	9.1	8.3	7.7	7.1	6.5	6
7.3	27	26	24	22	20	18	17	16	14	13	12	11	10	9.5	8.7	8	7.4	6.8	6.3	5.8	5.3
7.4	24	22	21	19	18	16	15	14	13	12	11	9.8	9	8.3	7.7	7	6.5	6	5.5	5.1	4.7
7.5	21	19	18	17	15	14	13	12	11	10	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4
7.6	18	17	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	2.9
7.8	13	12	11	10	9.3	8.5	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4	3.7	3.4	3.2	2.9	2.7	2.5
7.9	11	9.9	9.1	8.4	7.7	7.1	6.6	3	5.6	5.1	4.7	4.3	4	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8	8.8	8.2	7.6	7	6.4	5.9	5.4	5	4.6	4.2	3.9	3.6	3.3	3	2.8	2.6	2.4	2.2	2	1.9	1.7
8.1	7.2	6.8	6.3	5.8	5.3	4.9	4.5	4.1	3.8	3.5	3.2	3	2.7	2.5	2.3	2.1	2	1.8	1.7	1.5	1.4
8.2	6	5.6	5.2	4.8	4.4	4	3.7	3.4	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	4.9	4.6	4.3	3.9	3.6	3.3	3.1	2.8	2.6	2.4	2.2	2	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1	0.96
8.4	4.1	3.8	3.5	3.2	3	2.7	2.5	2.3	2.1	2	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1	0.93	0.86	0.79
8.5	3.3	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	0.98	0.9	0.83	0.77	0.71	0.65
8.6	2.8	2.6	2.4	2.2	2	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1	0.96	0.88	0.81	0.75	0.69	0.63	0.58	0.54
8.7	2.3	2.2	2	1.8	1.7	1.6	1.4	1.3	1.2	1.1	1	0.94	0.87	0.8	0.74	0.68	0.62	0.57	0.53	0.49	0.45

8.8	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37
8.9	1.6	1.5	1.4	1.3	1.2	1.1	1	0.93	0.85	0.79	0.72	0.67	0.61	0.56	0.52	0.48	0.44	0.4	0.37	0.34	0.32
9	1.4	1.3	1.2	1.1	1	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37	0.34	0.32	0.29	0.27

$$0.7249 \times \left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right) \times MIN\left(51.93, 23.12 \times 10^{0.036 \times (20-T)}\right)$$

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Table 13. Chronic Criteria for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Coldwater AZ and Warmwater AZ, Unionid Mussels Present

For the Aquatic and Wildlife Coldwater and Warmwater AZ uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment.

	Temperature (°C)																							
pH	**0-7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	4.9	4.6	4.3	4.1	3.8	3.6	3.3	3.1	2.9	2.8	2.6	2.4	2.3	2.1	2	1.9	1.8	1.6	1.5	1.5	1.4	1.3	1.2	1.1
6.6	4.8	4.5	4.3	4	3.8	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1
6.7	4.8	4.5	4.2	3.9	3.7	3.5	3.2	3	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1
6.8	4.6	4.4	4.1	3.8	3.6	3.4	3.2	3	2.8	2.6	2.4	2.3	2.1	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1
6.9	4.5	4.2	4	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1
7	4.4	4.1	3.8	3.6	3.4	3.2	3	2.8	2.6	2.4	2.3	2.2	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	0.99
7.1	4.2	3.9	3.7	3.5	3.2	3	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.95
7.2	4	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1	0.96	0.9
7.3	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1	0.97	0.91	0.85
7.4	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1	0.96	0.9	0.85	0.79
7.5	3.2	3	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.95	0.89	0.83	0.78	0.73
7.6	2.9	2.8	2.6	2.4	2.3	2.1	2	1.9	1.8	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.1	0.98	0.92	0.86	0.81	0.76	0.71	0.67
7.7	2.6	2.4	2.3	2.2	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.6
7.8	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53
7.9	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.5	0.47
8	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.6	0.56	0.53	0.5	0.44	0.44	0.41
8.1	1.5	1.5	1.4	1.3	1.2	1.1	1.1	0.99	0.92	0.87	0.81	0.76	0.71	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.4	0.38	0.35
8.2	1.3	1.2	1.2	1.1	1	0.96	0.9	0.84	0.79	0.74	0.7	0.65	0.61	0.57	0.54	0.5	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.3
8.3	1.1	1.1	0.99	0.93	0.87	0.82	0.76	0.72	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.4	0.38	0.35	0.33	0.31	0.29	0.27	0.26
8.4	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.5	0.47	0.44	0.41	0.39	0.36	0.34	0.32	0.3	0.28	0.26	0.25	0.23	0.22
8.5	0.8	0.75	0.71	0.67	0.62	0.58	0.55	0.51	0.48	0.45	0.42	0.4	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.24	0.22	0.21	0.2	0.18
8.6	0.68	0.64	0.6	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.33	0.31	0.29	0.28	0.26	0.24	0.23	0.21	0.2	0.19	0.18	0.16	0.15

8.7	0.57	0.54	0.51	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.3	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13
8.8	0.49	0.46	0.43	0.4	0.38	0.35	0.33	0.31	0.29	0.27	0.26	0.24	0.23	0.21	0.2	0.19	0.17	0.16	0.15	0.14	0.13	0.13	0.12	0.11
8.9	0.42	0.39	0.37	0.34	0.32	0.3	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.12	0.11	0.1	0.09
9	0.36	0.34	0.32	0.3	0.28	0.26	0.24	0.23	0.21	0.2	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.11	0.1	0.09	0.09	0.08

$$0.8876 \times \left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(2.126 \times 10^{0.028 \times (20-MAX(T,7))}\right)$$

Table 14. Acute Standards for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Coldwater AZ, Unionid Mussels Absent

For the Aquatic and Wildlife Coldwater uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment.

	Temperature (°C)																
pH	**0-14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	29	27
6.6	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	28	26
6.7	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	26	24
6.8	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	25	23
6.9	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	23	21
7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	21	20
7.1	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	19	18
7.2	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	17	16
7.3	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	16	14
7.4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	13
7.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	11
7.6	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	9.3
7.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.3	8.6	7.9
7.8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.8	7.2	6.6
7.9	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.5	6	5.5
8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.4	5	4.6
8.1	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.5	4.1	3.8
8.2	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.4	3.1
8.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3	2.8	2.6
8.4	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.3	2.1
8.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.9	1.8
8.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.4
8.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.3	1.2

8.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1
8.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.92	0.85
9	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.85	0.78	0.72

$$MIN\left(\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}\right),\left(0.7249\times\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)\times\left(62.15\times10^{0.036\times(20-T)}\right)\right)\right)$$

Table 15. Acute Standards for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Warmwater AZ Uses, Unionid Mussels Absent

For the Aquatic and Wildlife Warmwater uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment. For the aquatic and wildlife effluent dependent uses, unionids will be assumed to be absent.

	Temperature (°C)																
pH	**0-14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	51	51	51	51	51	51	51	51	51	48	44	40	37	34	31	29	27
6.6	49	49	49	49	49	49	49	49	49	46	42	39	36	33	30	28	26
6.7	46	46	46	46	46	46	46	46	46	43	40	37	34	31	29	26	24
6.8	44	44	44	44	44	44	44	44	44	41	38	35	32	29	27	25	23
6.9	41	41	41	41	41	41	41	41	41	38	35	32	30	27	25	23	21
7	38	38	38	38	38	38	38	38	38	35	32	30	27	25	23	21	20
7.1	34	34	34	34	34	34	34	34	34	32	29	27	25	23	21	19	18
7.2	31	31	31	31	31	31	31	31	31	29	26	24	22	21	19	17	16
7.3	27	27	27	27	27	27	27	27	27	26	23	22	20	18	17	16	14
7.4	24	24	24	24	24	24	24	24	24	22	21	19	17	16	15	14	13
7.5	21	21	21	21	21	21	21	21	21	19	18	16	15	14	13	12	11
7.6	18	18	18	18	18	18	18	18	18	17	15	14	13	12	11	10	9.3
7.7	15	15	15	15	15	15	15	15	15	14	13	12	11	10	9.3	8.6	7.9
7.8	13	13	13	13	13	13	13	13	13	12	11	10	9.2	8.5	7.8	7.2	6.6
7.9	11	11	11	11	11	11	11	11	11	9.9	9.1	8.4	7.7	7.1	6.5	6	5.5
8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.2	7.5	6.9	6.4	5.9	5.4	5	4.6
8.1	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	6.8	6.2	5.7	5.3	4.9	4.5	4.1	3.8
8.2	6	6	6	6	6	6	6	6	6	5.6	5.1	4.7	4.4	4	3.7	3.4	3.1
8.3	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.6	4.2	3.9	3.6	3.3	3	2.8	2.6
8.4	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.8	3.4	3.2	3	2.7	2.5	2.3	2.1
8.5	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.1	2.9	2.6	2.4	2.2	2.1	1.9	1.8
8.6	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.6	2.4	2.2	2	1.9	1.7	1.6	1.4

8.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2	1.8	1.7	1.5	1.4	1.3	1.2
8.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1
8.9	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1	0.92	0.85
9	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1	0.93	0.85	0.78	0.72

$$0.7249 \times \left(\frac{0.0114}{1 + 10^{7.204-pH}} + \frac{1.6181}{1 + 10^{pH-7.204}}\right) \times MIN\left(51.93, \left(62.15 \times 10^{0.036\times(20-T)}\right)\right)$$

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Table 16. Chronic Standards for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Warmwater AZ, Unionid Mussels Absent

For the Aquatic and Wildlife Warmwater uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment. For the aquatic and wildlife effluent dependent uses, unionids will be assumed to be absent.

	Temperature (°C)																							
pH	0-7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	19	17	16	15	14	13	13	12	11	10	9.7	9.1	8.5	8	7.5	7	6.6	6.2	5.8	5.4	5.1	4.8	4.5	4.2
6.6	18	17	16	15	14	13	12	12	11	10	9.6	9	8.4	7.9	7.4	6.9	6.5	6.1	5.7	5.4	5	4.7	4.4	4.1
6.7	18	17	16	15	14	13	12	11	11	10	9.4	8.8	8.3	7.7	7.3	6.8	6.4	6	5.6	5.3	4.9	4.6	4.3	4.1
6.8	17	16	15	14	14	13	12	11	10	9.8	9.2	8.6	8.1	7.6	7.1	6.7	6.2	5.8	5.5	5.1	4.8	4.5	4.2	4
6.9	17	16	15	14	13	12	12	11	10	9.5	8.9	8.4	7.8	7.4	6.9	6.5	6.1	5.7	5.3	5	4.7	4.4	4.1	3.9
7	16	15	14	14	13	12	11	10	9.8	9.2	8.6	8.1	7.6	7.1	6.7	6.2	5.9	5.5	5.1	4.8	4.5	4.2	4	3.7
7.1	16	15	14	13	12	11	11	10	9.4	8.8	8.3	7.7	7.3	6.8	6.4	6	5.6	5.3	4.9	4.6	4.3	4.1	3.8	3.6
7.2	15	14	13	12	12	11	10	9.5	9	8.4	7.9	7.4	6.9	6.5	6.1	5.7	5.3	5	4.7	4.4	4.1	3.9	3.6	3.4
7.3	14	13	12	12	11	10	9.6	9	8.4	7.9	7.4	6.9	6.5	6.1	5.7	5.4	5	4.7	4.4	4.1	3.9	3.6	3.4	3.2
7.4	13	12	12	11	10	9.5	9	8.4	7.9	7.4	6.9	6.5	6.1	5.7	5.3	5	4.7	4.4	4.1	3.9	3.6	3.4	3.2	3
7.5	12	11	11	10	9.4	8.8	8.2	7.7	7.2	6.8	6.4	6	5.6	5.2	4.9	4.6	4.3	4.1	3.8	3.6	3.3	3.1	2.9	2.8
7.6	11	10	10	9.1	8.5	8	7.5	7	6.6	6.2	5.8	5.4	5.1	4.8	4.5	4.2	3.9	3.7	3.5	3.2	3	2.9	2.7	2.5
7.7	9.9	9.3	8.7	8.1	7.7	7.2	6.8	6.3	5.9	5.6	5.2	4.9	4.6	4.3	4	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.4	2.3
7.8	8.8	8.3	7.8	7.3	6.8	6.4	6	5.6	5.3	5	4.6	4.4	4.1	3.8	3.6	3.4	3.2	3	2.8	2.6	2.4	2.3	2.1	2
7.9	7.8	7.3	6.8	6.4	6	5.6	5.3	5	4.6	4.4	4.1	3.8	3.6	3.4	3.2	3	2.8	2.6	2.4	2.3	2.1	2	1.9	1.8
8	6.8	6.3	6	5.6	5.2	4.9	4.6	4.3	4	3.8	3.6	3.3	3.1	2.9	2.7	2.6	2.4	2.3	2.1	2	1.9	1.7	1.6	1.5
8.1	5.8	5.5	5.1	4.8	4.5	4.2	4	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3
8.2	5	4.7	4.4	4.1	3.9	3.6	3.4	3.2	3	2.8	2.6	2.5	2.3	2.2	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1
8.3	4.2	4	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.96
8.4	3.6	3.4	3.2	3	2.8	2.6	2.4	2.3	2.1	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	0.99	0.92	0.87	0.81
8.5	3	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.95	0.89	0.83	0.78	0.73	0.69
8.6	2.6	2.4	2.2	2.1	2	1.9	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1	0.97	0.91	0.85	0.8	0.75	0.7	0.66	0.62	0.58

8.7	2.2	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1	0.93	0.88	0.82	0.77	0.72	0.68	0.63	0.6	0.56	0.52	0.49
8.8	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1	0.96	0.9	0.85	0.79	0.74	0.7	0.65	0.61	0.58	0.54	0.51	0.47	0.44	0.42
8.9	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1	0.94	0.88	0.82	0.77	0.72	0.68	0.64	0.6	0.56	0.52	0.49	0.46	0.43	0.4	0.38	0.36
9	1.4	1.3	1.2	1.1	1	0.98	0.92	0.86	0.81	0.76	0.71	0.66	0.62	0.58	0.55	0.51	0.48	0.45	0.42	0.4	0.37	0.35	0.33	0.31

$$0.9405 \times \left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(7.547 \times 10^{0.028 \times (20-MAX(T,7))}\right)$$

Table 17. Chronic Criteria for Total Ammonia (in mg/L, as N) for Aquatic and Wildlife Coldwater AZ, Unionid Mussels Absent

For the Aquatic and Wildlife Coldwater uses, unionids will be assumed to be present unless a study is performed demonstrating that they are absent and there is no historic evidence of their presence, or hydrologic modification has altered the flow regime in a way that would prevent their reestablishment.

	Temperature (°C)																
pH	**0-14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7	6.6	6.2	5.8	5.4	5.1	4.8	4.5	4.2
6.6	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	6.9	6.5	6.1	5.7	5.4	5	4.7	4.4	4.1
6.7	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	6.8	6.4	6	5.6	5.3	4.9	4.6	4.3	4.1
6.8	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.6	6.2	5.8	5.5	5.1	4.8	4.5	4.2	4
6.9	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.5	6.1	5.7	5.3	5	4.7	4.4	4.1	3.9
7	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.2	5.8	5.5	5.1	4.8	4.5	4.2	4	3.7
7.1	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6	5.6	5.3	4.9	4.6	4.3	4.1	3.8	3.6
7.2	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.7	5.3	5	4.7	4.4	4.1	3.9	3.6	3.4
7.3	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.4	5	4.7	4.4	4.1	3.9	3.6	3.4	3.2

7.4	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5	4.7	4.4	4.1	3.9	3.6	3.4	3.2	3
7.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.6	4.3	4.1	3.8	3.6	3.3	3.1	2.9	2.8
7.6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.2	3.9	3.7	3.5	3.2	3	2.9	2.7	2.5
7.7	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.4	2.3
7.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.2	3	2.8	2.6	2.4	2.3	2.1	2
7.9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3	2.8	2.6	2.4	2.3	2.1	2	1.9	1.8
8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.4	2.3	2.1	2	1.9	1.7	1.6	1.5
8.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3
8.2	2	2	2	2	2	2	2	2	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1
8.3	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1	0.96
8.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1.1	0.99	0.93	0.87	0.81
8.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1	0.95	0.89	0.83	0.78	0.73	0.69
8.6	1	1	1	1	1	1	1	1	0.97	0.91	0.85	0.8	0.75	0.7	0.66	0.62	0.58
8.7	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.82	0.77	0.72	0.68	0.64	0.6	0.56	0.52	0.49
8.8	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.7	0.65	0.61	0.58	0.54	0.51	0.47	0.44	0.42
8.9	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.6	0.56	0.52	0.49	0.46	0.43	0.41	0.38	0.36
9	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.51	0.48	0.45	0.42	0.4	0.37	0.35	0.33	0.31

$$0.9405 \times \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) \times MIN\left(6.920, \left(7.547 \times 10^{0.028\times(20-T)}\right)\right)$$

R18-11-216. The Protected Surface Waters List

Table A. Non-WOTUS Protected Surface Waters and Designated Uses

Watershed	Surface Waters	Segment Description and Location (Latitude and Longitudes are in NAD 83)	Aquatic and Wildlife		Human Health				Agricultural	
			A&Wc AZ	A&Ww AZ	FBC AZ	PBC AZ	DWS AZ	FC AZ	AgI AZ	AgL AZ

CG	Cottonwood Creek	Headwaters to confluence with unnamed tributary at 35°20'46"/113°35'31"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
CG	Cottonwood Creek	Below confluence with unnamed tributary to confluence with Truxton Wash		A&Ww AZ	FBC AZ			FC AZ		AgL AZ
CG	Wright Canyon Creek	Headwaters to confluence with unnamed tributary at 35°20'48"/113°30'40"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
CG	Wright Canyon Creek	Below confluence with unnamed tributary to confluence with Truxton Wash		A&Ww AZ	FBC AZ			FC AZ		AgL AZ
LC	Boot Lake	34°58'54"/111°20'11"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
LC	Little Ortega Lake	34°22'47"/109°40'06"	A&Wc AZ		FBC AZ			FC AZ		
LC	Mormon Lake	34°56'38"/111°27'25"	A&Wc AZ		FBC AZ		DWS AZ	FC AZ	AgI AZ	AgL AZ
LC	Potato Lake	35°03'15"/111°24'13"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
LC	Pratt Lake	34°01'32"/109°04'18"	A&Wc AZ		FBC AZ			FC AZ		
LC	Sponseller Lake	34°14'09"/109°50'45"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
LC	Vail Lake	35°05'23"/111°30'46"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
LC	Water Canyon Reservoir	34°03'38"/109°26'20		A&Ww AZ	FBC AZ			FC AZ	AgI AZ	AgL AZ
MG	Bonsall Park Lake	59th Avenue & Bethany Home Road at 33°31'24"/112°11'08"		A&Ww AZ		PBC AZ		FC AZ		
MG	Canal Park Lake	College Avenue & Curry Road, Tempe at 33°26'54"/ 111°56'19"		A&Ww AZ		PBC AZ		FC AZ		
SP	Big Creek	Headwaters to confluence with Pitchfork Canyon Wash	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
SP	Goudy Canyon Wash	Headwaters to confluence with Grant Creek	A&Wc AZ		FBC AZ			FC AZ		

SP	Grant Creek	Headwaters to confluence with unnamed tributary at 32°38'10"/109°56'37"		A&Ww AZ	FBC AZ		DWS AZ	FC AZ		
SP	Grant Creek	Below confluence with unnamed tributary to terminus near Willcox Playa		A&Ww AZ	FBC AZ			FC AZ		
SP	High Creek	Headwaters to confluence with unnamed tributary at 32°33'08"/110°14'42"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
SP	High Creek	Below confluence with unnamed tributary to terminus near Willcox Playa	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
SP	Pinery Creek	Headwaters to State Highway 181	A&Wc AZ		FBC AZ		DWS AZ	FC AZ		AgL AZ
SP	Pinery Creek	Below State Highway 181 to terminus near Willcox Playa		A&Ww AZ	FBC AZ		DWS AZ	FC AZ		AgL AZ
SP	Post Creek	Headwaters to confluence with Grant Creek	A&Wc AZ		FBC AZ			FC AZ	AgI AZ	AgL AZ
SP	Riggs Flat Lake	32°42'28"/109°57'53"	A&Wc AZ		FBC AZ			FC AZ	AgI AZ	AgL AZ
SP	Rock Creek	Headwaters to confluence with Turkey Creek			FBC AZ			FC AZ		AgL AZ
SP	Soldier Creek	Headwaters to confluence with Post Creek at 32°40'50"/109°54'41"	A&Wc AZ		FBC AZ			FC AZ		AgL AZ
SP	Snow Flat Lake	32°39'10"/109°51'54"	A&Wc AZ		FBC AZ			FC AZ	AgI AZ	AgL AZ
SP	Stronghold Canyon East	Headwaters to 31°55'9.28"/109°57'53.24"	A&Wc AZ			PBC AZ				
SP	Stronghold Canyon East	31°55'9.28"/109°57'53.24” to confluence with Carlink Canyon		A&Ww AZ		PBC AZ				
SP	Turkey Creek	Headwaters to confluence with Rock Creek	A&Wc AZ		FBC AZ			FC AZ	AgI AZ	AgL AZ
SP	Turkey Creek	Below confluence with Rock Creek to terminus near Willcox Playa		A&Ww AZ	FBC AZ			FC AZ	AgI AZ	AgL AZ
UG	Ward Canyon	Headwaters to confluence with Turkey Creek	A&Wc AZ		FBC AZ			FC AZ		AgL AZ

VR	Moonshine Creek	Headwaters to confluence with Post Creek	A&Wc AZ		FBC AZ			FC AZ		AgL AZ

Table B. WOTUS Protected Surface Waters

The waters listed in this table have been tentatively identified by ADEQ as WOTUS, under the law governing on 8/26/2022. Notwithstanding its inclusion on the list below, the status of a particular water in this table can be contested by a person in an enforcement or permit proceeding, a challenge to an identification as an impaired water, or a challenge to a proposed TMDL for an impaired water. Any changes to Table B will be made through formal rulemaking.

The waters on this list have their designated uses assigned by Title 18, Chapter 11, Article 1. Coordinates are from the North American Datum of 1983 (NAD83). All latitudes in Arizona are north and all longitudes are west, but the negative signs are not included in the WOTUS Protected Surface Waters Table. Some web-based mapping systems require a negative sign before the longitude values to indicate it is a west longitude.

Watersheds:

BW = Bill Williams
CG = Colorado – Grand Canyon
CL = Colorado – Lower Gila
LC = Little Colorado
MG = Middle Gila
SC = Santa Cruz – Rio Magdelena – Rio Sonoyta
SP = San Pedro – Willcox Playa – Rio Yaqui
SR = Salt River
UG = Upper Gila
VR = Verde River

Other Abbreviations:

WWTP = Wastewater Treatment Plant
Km = kilometers

Watershed	Surface Water	Segment Description and Location (Latitude and Longitudes are in NAD 83)
BW	Big Sandy River	Headwaters to Alamo Lake

BW	Boulder Creek	Below confluence with unnamed tributary to confluence with Burro Creek
BW	Burro Creek	Below confluence with Boulder Creek to confluence with Big Sandy River
BW	Burro Creek (OAW)	Headwaters to confluence with Boulder Creek
BW	Francis Creek (OAW)	Headwaters to confluence with Burro Creek
BW	Kirkland Creek	Headwaters to confluence with Santa Maria River
BW	Trout Creek	Below confluence with unnamed tributary to confluence with Knight Creek
CG	Beaver Dam Wash	Headwaters to confluence with the Virgin River
CG	Bright Angel Creek	Headwaters to confluence with Roaring Springs Creek
CG	Bright Angel Creek	Below Roaring Spring Springs Creek to confluence with Colorado River
CG	Colorado River	Lake Powell to Lake Mead
CG	Crystal Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	Deer Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	Garden Creek	Headwaters to confluence with Pipe Creek
CG	Havasu Creek	From the Havasupai Indian Reservation boundary to confluence with the Colorado River
CG	Hermit Creek	Below Hermit Pack Trail crossing to confluence with the Colorado River
CG	Kanab Creek	Headwaters to confluence with the Colorado River
CG	Lake Mead	36°06'18"/114°26'33"
CG	Lake Powell	36°59'53"/111°08'17"
CG	Nankoweap Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	Paria River	Utah border to confluence with the Colorado River
CG	Phantom Creek	Below confluence with unnamed tributary to confluence with Bright Angel Creek
CG	Pipe Creek	Headwaters to confluence with the Colorado River
CG	Shinumo Creek	Below confluence with unnamed tributary to confluence with the Colorado River
CG	Short Creek	Headwaters to confluence with Fort Pearce Wash
CG	Tapeats Creek	Headwaters to confluence with the Colorado River
CG	Thunder River	Headwaters to confluence with Tapeats Creek
CG	Vasey's Paradise	A spring at 36°29'52"/111°51'26"

CG	Virgin River	Headwaters to confluence with the Colorado River
CG	White Creek	Headwaters to confluence with unnamed tributary at 36°18'45"/112°21'03"
CG	White Creek	Below confluence with unnamed tributary to confluence with the Colorado River
CL	A10 Backwater	33°31'45"/114°33'19"
CL	A7 Backwater	33°34'27"/114°32'04"
CL	Adobe Lake	33°02'36"/114°39'26"
CL	Cibola Lake	33°14'01"/114°40'31"
CL	Clear Lake	33°01'59"/114°31'19"
CL	Colorado River	Lake Mead to Topock Marsh
CL	Colorado River	Topock Marsh to Morelos Dam
CL	Gila River	Painted Rock Dam to confluence with the Colorado River
CL	Hunter's Hole Backwater	32°31'13"/114°48'07"
CL	Imperial Reservoir	32°53'02"/114°27'54"
CL	Island Lake	33°01'44"/114°36'42"
CL	Laguna Reservoir	32°51'35"/114°28'29"
CL	Lake Havasu	34°35'18"/114°25'47"
CL	Lake Mohave	35°26'58"/114°38'30"
CL	Martinez Lake	32°58'49"/114°28'09"
CL	Mittry Lake	32°49'17"/114°27'54"
CL	Nortons Lake	33°02'30"/114°37'59"
CL	Pretty Water Lake	33°19'51"/114°42'19"
CL	Topock Marsh	34°43'27"/114°28'59"
LC	Auger Creek	Headwaters to confluence with Nutrioso Creek
LC	Chevelon Canyon	Headwaters to confluence with the Little Colorado River
LC	Chevelon Canyon Lake	34°29'18"/110°49'30"
LC	Clear Creek	Headwaters to confluence with the Little Colorado River
LC	Clear Creek Reservoir	34°57'09"/110°39'14"
LC	Colter Creek	Headwaters to confluence with Nutrioso Creek
LC	Colter Reservoir	33°56'39"/109°28'53"
LC	Coyote Creek	Headwaters to confluence with the Little Colorado River
LC	Cragin Reservoir (formerly Blue Ridge Reservoir)	34°32'40"/111°11'33"

LC	East Clear Creek	Headwaters to confluence with Clear Creek
LC	Ellis Wiltbank Reservoir	34°05'25"/109°28'25"
LC	Fool's Hollow Lake	34°16'30"/110°03'43"
LC	Lee Valley Creek	From Lee Valley Reservoir to confluence with the East Fork of the Little Colorado River
LC	Lily Creek	Headwaters to confluence with Coyote Creek
LC	Little Colorado River	Headwaters to Lyman Reservoir
LC	Little Colorado River	Below Lyman Reservoir to confluence with the Puerco River
LC	Little Colorado River	Below Puerco River confluence to the Colorado River, excluding segments on Native American Lands
LC	Little Colorado River, East Fork	Headwaters to confluence with the Little Colorado River
LC	Little Colorado River, South Fork	Headwaters to confluence with the Little Colorado River
LC	Little Colorado River, West Fork	Below Government Springs to confluence with the Little Colorado River
LC	Lyman Reservoir	34°21'21"/109°21'35"
LC	Mamie Creek	Headwaters to confluence with Coyote Creek
LC	Morrison Creek	Headwaters to Mamie Creek @ 33°59'24.45"/109°03'51.94
LC	Nutrioso Creek	Headwaters to confluence with the Little Colorado River
LC	Porter Creek	Headwaters to confluence with Show Low Creek
LC	Riggs Creek	Headwaters to Nutrioso Creek
LC	Rio de Flag	Headwaters to City of Flagstaff WWTP outfall at 35°12'21"/111°39'17"
LC	Rudd Creek	Headwaters to confluence with Nutrioso Creek
LC	Rosey Creek	Headwaters to 34°02'28.72"/109°27'24.3"
LC	Scott Reservoir	34°10'31"/109°57'31"
LC	Show Low Creek	Headwaters to confluence with Silver Creek
LC	Show Low Lake	34°11'36"/110°00'12"
LC	Silver Creek	Headwaters to confluence with the Little Colorado River
LC	White Mountain Lake	34°21'57"/109°59'21"
LC	Willow Creek	Headwaters to confluence with Clear Creek
LC	Zuni River	Headwaters to confluence with the Little Colorado River
MG	Agua Fria River	From State Route 169 to Lake Pleasant
MG	Ash Creek	Headwaters to confluence with Tex Canyon
MG	East Maricopa Floodway	From Brown and Greenfield Rds to the Gila River Indian Reservation Boundary
MG	Fain Lake	Town of Prescott Valley Park Lake 34°34'29"/ 112°21'06"

MG	Gila River	San Carlos Indian Reservation boundary to the Ashurst-Hayden Dam
MG	Gila River (EDW)	From the confluence with the Salt River to Gillespie Dam
MG	Hassayampa Lake	34°25'45"/112°25'33"
MG	Hassayampa River	Below unnamed tributary to the Buckeye Irrigation Company Canal
MG	Hassayampa River	Headwaters to confluence with unnamed tributary at 34°26'09"/112°30'32"
MG	Lake Pleasant	33°53'46"/112°16'29"
MG	Little Ash Creek	Headwaters to confluence with Ash Creek at 34°20'45.74"/112°4'17.26"
MG	Little Sycamore Creek	Headwaters to Sycamore Creek @ 34°21'39.13"/111°58'49.98"
MG	Mineral Creek (diversion tunnel and lined channel)	33°12'24"/110°59'58" to 33°07'56"/110°58'34"
MG	Papago Park South Pond	Curry Road, Tempe 33°26'22"/111°55'55"
MG	Salt River	Verde River to 2 km below Granite Reef Dam
MG	Seven Springs Wash	Headwaters to Unnamed trib @ 33°57'58.66"/111°51'52.07"
MG	Tempe Town Lake	At Mill Avenue Bridge at 33°26'00"/111°56'26"
MG	Turkey Creek	Headwaters to confluence with unnamed tributary at 34°19'28"/112°21'33"
SC	Alum Gulch	Below 31°29'17"/110°44'25" to confluence with Sonoita Creek
SC	California Gulch	Headwaters To U.S./Mexico border
SC	Cienega Creek (OAW)	From confluence with Gardner Canyon to USGS gaging station (#09484600)
SC	Cox Gulch	Headwaters to Three R Canyon @ 31°28'28.03"/110°47'14.65"
SC	Holden Canyon Creek	Headwaters to U.S./Mexico border
SC	Julian Wash	Headwaters to confluence with the Santa Cruz River
SC	Nogales Wash	Headwaters to confluence with Potrero Creek
SC	Parker Canyon Creek	Below unnamed tributary to U.S./Mexico border
SC	Rillito Creek	Headwaters to confluence with the Santa Cruz River
SC	Romero Canyon Creek	Below unnamed tributary to confluence with Sutherland Wash
SC	Santa Cruz River	Headwaters to the at U.S./Mexico border
SC	Santa Cruz River	U.S./Mexico border to the Nogales International WWTP outfall at 31°27'25"/110°58'04"
SC	Santa Cruz River	Tubac Bridge to Agua Nueva WRF outfall at 32°17'04"/111°01'45"
SC	Santa Cruz River (EDW)	Agua Nueva WRF outfall to Baumgartner Road

SC	Sonoita Creek	Headwaters to the Town of Patagonia WWTP outfall at 31°32'25"/110°45'31"
SC	Sonoita Creek (EDW)	Town of Patagonia WWTP outfall to permanent groundwater upwelling point approximately 1600 feet downstream of outfall
SC	Sycamore Canyon	Headwaters to the U.S./Mexico border
SP	Aravaipa Creek	Below downstream boundary of Aravaipa Canyon Wilderness Area to confluence with the San Pedro River
SP	Aravaipa Creek (OAW)	Stowe Gulch to downstream boundary of Aravaipa Canyon Wilderness Area
SP	Bass Canyon Creek	Below confluence with unnamed tributary to confluence with Hot Springs Canyon Creek
SP	Bear Creek	Headwaters to U.S./Mexico border
SP	Black Draw	Headwaters to the U.S./Mexico border
SP	Carr Canyon Creek	Headwaters to confluence with unnamed tributary at 31°27'01"/110°15'48"
SP	Gold Gulch	Headwaters to U.S./Mexico border
SP	Ramsey Canyon Creek	Below Forest Service Road #110 to confluence with Carr Wash
SP	San Pedro River	U.S./ Mexico Border to Buehman Canyon
SP	San Pedro River	From Buehman canyon to confluence with the Gila River
SP	Whitewater Draw	Headwaters to confluence with unnamed tributary at 31°20'36"/109°43'48"
SP	Whitewater Draw	Below confluence with unnamed tributary to U.S./ Mexico border
SR	Ackre Lake	33°37'01"/109°20'40"
SR	Apache Lake	33°37'23"/111°12'26"
SR	Bear Wallow Creek (OAW)	Headwaters to confluence with the Black River
SR	Beaver Creek	Headwaters to confluence with Black River
SR	Black River	Headwaters to confluence with Salt River
SR	Black River, East Fork	From 33°51'19"/109°18'54" to confluence with the Black River
SR	Black River, North Fork of East Fork	Headwaters to confluence with Boneyard Creek
SR	Black River, West Fork	Headwaters to confluence with the Black River
SR	Boggy Creek	Headwaters to confluence with Centerfire Creek
SR	Boneyard Creek	Headwaters to confluence with Black River, East Fork
SR	Canyon Lake	33°32'44"/111°26'19"
SR	Cherry Creek	Below unnamed tributary to confluence with the Salt River
SR	Conklin Creek	Headwaters to confluence with the Black River

SR	Corduroy Creek	Headwaters to confluence with Fish Creek
SR	Devils Chasm Creek	Below confluence with unnamed tributary to confluence with Cherry Creek
SR	Dipping Vat Reservoir	33°55'47"/109°25'31"
SR	Fish Creek	Headwaters to confluence with the Black River
SR	Haigler Creek	Headwaters to confluence with unnamed tributary at 34°12'23"/111°00'15"
SR	Haigler Creek	Below confluence with unnamed tributary to confluence with Tonto Creek
SR	Hannagan Creek	Headwaters to confluence with Beaver Creek
SR	Hay Creek (OAW)	Headwaters to confluence with the Black River, West Fork
SR	Horton Creek	Headwaters to confluence with Tonto Creek
SR	P B Creek	Below Forest Service Road #203 to Cherry Creek
SR	Pinal Creek	From Lower Pinal Creek WTP outfall # to See Ranch Crossing at 33°32'25"/110°52'28"
SR	Pinal Creek	From unnamed tributary to confluence with Salt River
SR	Pinto Creek	Headwaters to confluence with unnamed tributary at 33°19'27"/110°54'58"
SR	Roosevelt Lake	33°52'17"/111°00'17"
SR	Rye Creek	Headwaters to confluence with Tonto Creek
SR	Saguaro Lake	33°33'44"/111°30'55"
SR	Salt River	White Mountain Apache Reservation Boundary at 33°48'52"/110°31'33" to Roosevelt Lake
SR	Salt River	Theodore Roosevelt Dam to 2 km below Granite Reef Dam
SR	Thompson Creek	Headwaters to confluence with the West Fork of the Black River
SR	Tonto Creek	Headwaters to confluence with unnamed tributary at 34°18'11"/111°04'18"
SR	Tonto Creek	Below confluence with unnamed tributary to Roosevelt Lake
SR	Willow Creek	Headwaters to confluence with Beaver Creek
SR	Workman Creek	Below confluence with Reynolds Creek to confluence with Salome Creek
UG	Apache Creek	Headwaters to confluence with the Gila River
UG	Bitter Creek	Headwaters to confluence with the Gila River
UG	Blue River	Headwaters to confluence with Strayhorse Creek at 33°29'02"/109°12'14"
UG	Blue River	Below confluence with Strayhorse Creek to confluence with San Francisco River
UG	Bob Thomas Creek	Headwaters to Stone Creek 33°51'93"/109°42'52"

UG	Bonita Creek (OAW)	San Carlos Indian Reservation boundary to confluence with the Gila River
UG	Campbell Blue Creek	Headwaters to confluence with the Blue River
UG	Cave Creek (OAW)	Headwaters to confluence with South Fork Cave Creek
UG	Cave Creek (OAW)	Below confluence with South Fork Cave Creek to Coronado National Forest boundary
UG	Cave Creek, South Fork	Headwaters to confluence with Cave Creek
UG	Deadman Canyon Creek	Headwaters to confluence with unnamed tributary at 32°43'50"/109°49'03"
UG	Eagle Creek	Below confluence with unnamed tributary to confluence with the Gila River
UG	Gila River	New Mexico border to the San Carlos Indian Reservation boundary
UG	Grant Creek	Headwaters to confluence with the Blue River
UG	Judd Lake	33°51'15"/109°09'35"
UG	K P Creek (OAW)	Headwaters to confluence with the Blue River
UG	Little Blue Creek	Below confluence with Dutch Blue Creek to confluence with Blue Creek
UG	Luna Lake	33°49'50"/109°05'06"
UG	North Fork Cave Creek	Headwaters to Cave Creek @ 31°52'56.63"/109°12'19.75"
UG	Raspberry Creek	Headwaters to confluence with the Blue River
UG	San Francisco River	Headwaters to the New Mexico border
UG	San Francisco River	New Mexico border to confluence with the Gila River
UG	San Simon River	Headwaters to confluence with the Gila River
UG	Stone Creek	Headwaters to confluence with the San Francisco River
UG	Thomas Creek	Below confluence with Rousensock Creek to confluence with Blue River
UG	Turkey Creek	Headwaters to confluence with Campbell Blue Creek
VR	Bartlett Lake	33°49'52"/111°37'44"
VR	Beaver Creek	Headwaters to confluence with the Verde River
VR	Bitter Creek	Headwaters to the Jerome WWTP outfall at 34°45'12"/112°06'24"
VR	Bitter Creek	Below the Yavapai Apache Indian Reservation boundary to confluence with the Verde River
VR	Dead Horse Lake	34°45'08"/112°00'42"
VR	East Verde River	Headwaters to confluence with Ellison Creek
VR	East Verde River	Below confluence with Ellison Creek to confluence with the Verde River
VR	Fossil Creek (OAW)	Headwaters to confluence with the Verde River
VR	Fossil Springs (OAW)	34°25'24"/111°34'27"

VR	Horseshoe Reservoir	34°00'25"/111°43'36"
VR	Oak Creek (OAW)	Headwaters to confluence with unnamed tributary at 34°59'15"/111°44'47"
VR	Oak Creek (OAW)	Below confluence with unnamed tributary to confluence with Verde River
VR	Spring Creek	Below confluence with unnamed tributary to confluence with Oak Creek
VR	Sullivan Lake	34°51'42"/112°27'51"
VR	Sycamore Creek	Headwaters to confluence with unnamed tributary at 35°03'41"/111°57'31"
VR	Sycamore Creek	Headwaters to confluence with Verde River at 33°37'55"/111°39'58"
VR	Verde River	From headwaters at confluence of Chino Wash and Granite Creek to Bartlett Lake Dam
VR	Verde River	Below Bartlett Lake Dam to Salt River
VR	West Clear Creek	Headwaters to confluence with Meadow Canyon
VR	West Clear Creek	Below confluence with Meadow Canyon to confluence with the Verde River
VR	Wet Beaver Creek	Below unnamed springs to confluence with Dry Beaver Creek
VR	Willow Creek Reservoir	34°36'17"/112°26'19"

Table C. Historically Regulated as WOTUS and in Need of Confirmation

The waters listed in this table have historically been and will continue to be regulated as WOTUS unless ADEQ makes a determination that they are non-WOTUS. Notwithstanding its inclusion on the list below, the status of a particular water in this table can be contested by a person in an enforcement or permit proceeding, a challenge to an identification as an impaired water, or a challenge to a proposed TMDL for an impaired water. Any changes to Table C will be made through formal rulemaking.

The waters on this list have their designated uses assigned by Title 18, Chapter 11, Article 1. Coordinates are from the North American Datum of 1983 (NAD83). All latitudes in Arizona are north and all longitudes are west, but the negative signs are not included in the Historically Regulated as WOTUS and in Need of Confirmation Table. Some web-based mapping systems require a negative sign before the longitude values to indicate it is a west longitude.

Watersheds:

BW = Bill Williams

CG = Colorado – Grand Canyon

CL = Colorado – Lower Gila
LC = Little Colorado
MG = Middle Gila
SC = Santa Cruz – Rio Magdelena – Rio Sonoyta
SP = San Pedro – Willcox Playa – Rio Yaqui
SR = Salt River
UG = Upper Gila
VR = Verde River

Other Abbreviations:

WWTP = Wastewater Treatment Plant
Km = kilometers

Watershed	Surface Water	Segment Description and Location (Latitude and Longitudes are in NAD 83)
BW	Alamo Lake	34°14'06"/113°35'00"
BW	Bill Williams River	Alamo Lake to confluence with Colorado River
BW	Blue Tank	34°40'14"/112°58'17"
BW	Boulder Creek	Headwaters to confluence with unnamed tributary at 34°41'13"/113°03'37"
BW	Burro Creek	Below confluence with Boulder Creek to confluence with Big Sandy River
BW	Burro Creek (OAW)	Headwaters to confluence with Boulder Creek
BW	Carter Tank	34°52'27"/112°57'31"
BW	Conger Creek	Headwaters to confluence with unnamed tributary at 34°45'15"/113°05'46"
BW	Conger Creek	Below confluence with unnamed tributary to confluence with Burro Creek
BW	Copper Basin Wash	Headwaters to confluence with unnamed tributary at 34°28'12"/112°35'33"
BW	Copper Basin Wash	Below confluence with unnamed tributary to confluence with Skull Valley Wash
BW	Cottonwood Canyon	Headwaters to Bear Trap Spring
BW	Cottonwood Canyon	Below Bear Trap Spring to confluence at Sycamore Creek
BW	Date Creek	Headwaters to confluence with Santa Maria River
BW	Knight Creek	Headwaters to confluence with Big Sandy River

BW	Peoples Canyon (OAW)	Headwaters to confluence with Santa Maria River
BW	Red Lake	35°12'18"/113°03'57"
BW	Santa Maria River	Headwaters to Alamo Lake
BW	Trout Creek	Headwaters to confluence with unnamed tributary at 35°06'47"/113°13'01"
CG	Agate Canyon	Headwaters to confluence with the Colorado River
CG	Big Springs Tank	36°36'08"/112°21'01"
CG	Boucher Creek	Headwaters to confluence with the Colorado River
CG	Bright Angel Wash	Headwaters to Grand Canyon National Park South Rim WWTP outfall at 36°02'59"/112°09'02"
CG	Bright Angel Wash (EDW)	Grand Canyon National Park South Rim WWTP outfall to Coconino Wash
CG	Bulrush Canyon Wash	Headwaters to confluence with Kanab Creek
CG	Cataract Creek	Headwaters to Santa Fe Reservoir
CG	Cataract Creek	Santa Fe Reservoir to City of Williams WWTP outfall at 35°14'40"/112°11'18"
CG	Cataract Creek	Red Lake Wash to Havasupai Indian Reservation boundary
CG	Cataract Creek (EDW)	City of Williams WWTP outfall to 1 km downstream
CG	Cataract Lake	35°15'04"/112°12'58"
CG	Chuar Creek	Headwaters to confluence with unnamed tributary at 36°11'35"/111°52'20"
CG	Chuar Creek	Below unnamed tributary to confluence with the Colorado River
CG	City Reservoir	35°13'57"/112°11'25"
CG	Clear Creek	Headwaters to confluence with unnamed tributary at 36°07'33"/112°00'03"
CG	Clear Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	Coconino Wash (EDW)	South Grand Canyon Sanitary District Tusayan WRF outfall at 35°58'39"/112°08'25" to 1 km downstream
CG	Crystal Creek	Headwaters to confluence with unnamed tributary at 36°13'41"/112°11'49"
CG	Deer Creek	Headwaters to confluence with unnamed tributary at 36°26'15"/112°28'20"
CG	Detrital Wash	Headwaters to Lake Mead
CG	Dogtown Reservoir	35°12'40"/112°07'54"
CG	Dragon Creek	Headwaters to confluence with Milk Creek

CG	Dragon Creek	Below confluence with Milk Creek to confluence with Crystal Creek
CG	Gonzalez Lake	35°15'26"/112°12'09"
CG	Grand Wash	Headwaters to Colorado River
CG	Grapevine Creek	Headwaters to confluence with the Colorado River
CG	Grapevine Wash	Headwaters to Colorado River
CG	Hakatai Canyon	Headwaters to confluence with the Colorado River
CG	Hance Creek	Headwaters to confluence with the Colorado River
CG	Hermit Creek	Headwaters to Hermit Pack Trail crossing at 36°03'38"/112°14'00"
CG	Horn Creek	Headwaters to confluence with the Colorado River
CG	Hualapai Wash	Headwaters to Lake Mead
CG	Jacob Lake	36°42'27"/112°13'50"
CG	Kaibab Lake	35°17'04"/112°09'32"
CG	Kwagunt Creek	Headwaters to confluence with unnamed tributary at 36°13'37"/111°54'50"
CG	Kwagunt Creek	Below confluence with unnamed tributary to confluence with the Colorado River
CG	Lonetree Canyon Creek	Headwaters to confluence with the Colorado River
CG	Matkatamiba Creek	Below Havasupai Indian Reservation boundary to confluence with the Colorado River
CG	Monument Creek	Headwaters to confluence with the Colorado River
CG	Nankoweap Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	National Canyon Creek	Headwaters to Hualapai Indian Reservation boundary at 36°15'15"/112°52'34"
CG	North Canyon Creek	Headwaters to confluence with unnamed tributary at 36°33'58"/111°55'41"
CG	North Canyon Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	Olo Canyon	Headwaters to confluence with the Colorado River
CG	Parashant Canyon	Headwaters to confluence with unnamed tributary at 36°21'02"/113°27'56"
CG	Parashant Canyon	Below confluence with unnamed tributary to confluence with the Colorado River
CG	Phantom Creek	Headwaters to confluence with unnamed tributary at 36°09'29"/112°08'13"
CG	Red Canyon Creek	Headwaters to confluence with the Colorado River '

CG	Roaring Springs	36°11'45"/112°02'06"
CG	Roaring Springs Creek	Headwaters to confluence with Bright Angel Creek
CG	Royal Arch Creek	Headwaters to confluence with the Colorado River
CG	Ruby Canyon	Headwaters to confluence with the Colorado River
CG	Russell Tank	35°52'21"/111°52'45"
CG	Saddle Canyon Creek	Headwaters to confluence with unnamed tributary at 36°21'36"/112°22'43"
CG	Saddle Canyon Creek	Below confluence with unnamed tributary to confluence with Colorado River
CG	Santa Fe Reservoir	35°14'31"/112°11'10"
CG	Sapphire Canyon	Headwaters to confluence with the Colorado River
CG	Serpentine Canyon	Headwaters to confluence with the Colorado River
CG	Shinumo Creek	Headwaters to confluence with unnamed tributary at 36°18'18"/112°18'07"
CG	Slate Creek	Headwaters to confluence with the Colorado River
CG	Spring Canyon Creek	Headwaters to confluence with the Colorado River
CG	Trail Canyon Creek	Headwaters to confluence with the Colorado River
CG	Transept Canyon	Headwaters to Grand Canyon National Park North Rim WWTP outfall at 36°12'20"/112°03'35"
CG	Transept Canyon	From 1 km downstream of the Grand Canyon National Park North Rim WWTP outfall to confluence with Bright Angel Creek
CG	Transept Canyon (EDW)	Grand Canyon National Park North Rim WWTP outfall to 1 km downstream
CG	Travertine Canyon Creek	Headwaters to confluence with the Colorado River
CG	Turquoise Canyon	Headwaters to confluence with the Colorado River
CG	Unkar Creek	Below confluence with unnamed tributary at 36°07'54"/111°54'06" to confluence with Colorado River
CG	Unnamed Wash to Cedar Canyon (EDW)	Grand Canyon National Park Desert View WWTP outfall at 36°02'06"/111°49'13" to confluence with Cedar Canyon
CG	Unnamed Wash to Spring Valley Wash (EDW)	Valle Airpark WRF outfall at 35°38'34"/112°09'22" to confluence with Spring Valley Wash
CG	Vishnu Creek	Headwaters to confluence with the Colorado River
CG	Warm Springs Creek	Headwaters to confluence with the Colorado River
CG	West Cataract Creek	Headwaters to confluence with Cataract Creek

CL	Columbus Wash	Headwaters to confluence with the Gila River
CL	Holy Moses Wash	Headwaters to City of Kingman Downtown WWTP outfall at 35°10'33"/114°03'46"
CL	Holy Moses Wash	From 3 km downstream of City of Kingman Downtown WWTP outfall to confluence with Sawmill Wash
CL	Holy Moses Wash (EDW)	City of Kingman Downtown WWTP outfall to 3 km downstream
CL	Mohave Wash	Headwaters to Lower Colorado River
CL	Painted Rock (Borrow Pit) Lake	33°04'55"/113°01'17"
CL	Quigley Pond	32°43'40"/113°57'44"
CL	Redondo Lake	32°44'32"/114°29'03"
CL	Sacramento Wash	Headwaters to Topock Marsh
CL	Sawmill Canyon	Headwaters to abandoned gaging station at 35°09'45"/113°57'56"
CL	Sawmill Canyon	Below abandoned gaging station to confluence with Holy Moses Wash
CL	Tyson Wash (EDW)	Town of Quartzsite WWTP outfall at 33°42'39"/ 114°13'10" to 1 km downstream
CL	Wellton Canal	Wellton-Mohawk Irrigation District
CL	Yuma Area Canals	Above municipal water treatment plant intakes
CL	Yuma Area Canals	Below municipal water treatment plant intakes and all drains
LC	Als Lake	35°02'10"/111°25'17"
LC	Ashurst Lake	35°01'06"/111°24'18"
LC	Atcheson Reservoir	33°59'59"/109°20'43"
LC	Barbershop Canyon Creek	Headwaters to confluence with East Clear Creek
LC	Bear Canyon Creek	Headwaters to confluence with General Springs Canyon
LC	Bear Canyon Creek	Headwaters to confluence with Willow Creek
LC	Bear Canyon Lake	34°24'00"/111°00'06"
LC	Becker Lake	34°09'11"/109°18'23"
LC	Billy Creek	Headwaters to confluence with Show Low Creek
LC	Black Canyon	Headwaters to confluence with Chevelon Creek
LC	Bow and Arrow Wash	Headwaters to confluence with Rio de Flag

LC	Buck Springs Canyon Creek	Headwaters to confluence with Leonard Canyon Creek
LC	Bunch Reservoir	34°02'20"/109°26'48"
LC	Carnero Lake	34°06'57"/109°31'42"
LC	Chevelon Creek, West Fork	Headwaters to confluence with Chevelon Creek
LC	Chilson Tank	34°51'43"/111°22'54"
LC	Coconino Reservoir	35°00'05"/111°24'10"
LC	Colter Creek	Headwaters to confluence with Nutrioso Creek
LC	Concho Creek	Headwaters to confluence with Carrizo Wash
LC	Concho Lake	34°26'37"/109°37'40"
LC	Cow Lake	34°53'14"/111°18'51"
LC	Crisis Lake (Snake Tank #2)	34°47'51"/111°17'32"
LC	Dane Canyon Creek	Headwaters to confluence with Barbershop Canyon Creek
LC	Daves Tank	34°44'22"/111°17'15"
LC	Deep Lake	35°03'34"/111°25'00"
LC	Ducksnest Lake	34°59'14"/111°23'57"
LC	Estates at Pine Canyon lakes (EDW)	35°09'32"/111°38'26"
LC	Fish Creek	Headwaters to confluence with the Little Colorado River
LC	General Springs Canyon Creek	Headwaters to confluence with East Clear Creek
LC	Geneva Reservoir	34°01'45"/109°31'46"
LC	Hall Creek	Headwaters to confluence with the Little Colorado River
LC	Hart Canyon Creek	Headwaters to confluence with Willow Creek
LC	Hay Lake	34°00'11"/109°25'57"
LC	Hog Wallow Lake	33°58'57"/109°25'39"
LC	Horse Lake	35°03'55"/111°27'50"
LC	Hulsey Creek	Headwaters to confluence with Nutrioso Creek
LC	Hulsey Lake	33°55'58"/109°09'40"
LC	Humphrey Lake (EDW)	35°11'51"/111°35'19"
LC	Indian Lake	35°00'39"/111°22'41"
LC	Jacks Canyon	Headwaters to confluence with the Little Colorado River
LC	Jarvis Lake	33°58'59"/109°12'36"

LC	Kinnikinick Lake	34°53'53"/111°18'18"
LC	Knoll Lake	34°25'38"/111°05'13"
LC	Lake Mary, Lower	35°06'21"/111°34'38"
LC	Lake Mary, Upper	35°03'23"/111°28'34"
LC	Lake of the Woods	34°09'40"/109°58'47"
LC	Lee Valley Creek (OAW)	Headwaters to Lee Valley Reservoir
LC	Lee Valley Reservoir	33°56'29"/109°30'04"
LC	Leonard Canyon Creek	Headwaters to confluence with Clear Creek
LC	Leonard Canyon Creek, East Fork	Headwaters to confluence with Leonard Canyon Creek
LC	Leonard Canyon Creek, Middle Fork	Headwaters to confluence with Leonard Canyon, West Fork
LC	Leonard Canyon Creek, West Fork	Headwaters to confluence with Leonard Canyon, East Fork
LC	Leroux Wash, tributary to Little Colorado River	From City of Holbrook-Painted Mesa WRF outfall at 34° 54' 30", -110° 11' 36" to Little Colorado River. The outfall discharges into Leroux Wash. All reaches of the Little Colorado River between the outfall to the Colorado River are perennial or intermittent.
LC	Little Colorado River, West Fork (OAW)	Headwaters to Government Springs
LC	Little George Reservoir	34°00'37"/109°19'15"
LC	Little Mormon Lake	34°17'00"/109°58'06"
LC	Long Lake, Lower	34°47'16"/111°12'40"
LC	Long Lake, Upper	35°00'08"/111°21'23"
LC	Long Tom Tank	34°20'35"/110°49'22"
LC	Lower Walnut Canyon Lake (EDW)	35°12'04"/111°34'07"
LC	Marshall Lake	35°07'18"/111°32'07"
LC	McKay Reservoir	34°01'27"/109°13'48"
LC	Merritt Draw Creek	Headwaters to confluence with Barbershop Canyon Creek
LC	Mexican Hay Lake	34°01'58"/109°21'25"
LC	Milk Creek	Headwaters to confluence with Hulsey Creek
LC	Miller Canyon Creek	Headwaters to confluence with East Clear Creek
LC	Miller Canyon Creek, East Fork	Headwaters to confluence with Miller Canyon Creek
LC	Morton Lake	34°53'37"/111°17'41"

LC	Mud Lake	34°55'19"/111°21'29"
LC	Ned Lake (EDW)	34°17'17"/110°03'22"
LC	Norton Reservoir	34°03'57"/109°31'27"
LC	Paddy Creek	Headwaters to confluence with Nutrioso Creek
LC	Pierce Seep	34°23'39"/110°31'17"
LC	Pine Tank	34°46'49"/111°17'21"
LC	Pintail Lake (EDW)	34°18'05"/110°01'21"
LC	Puerco River	Headwaters to confluence with the Little Colorado River
LC	Puerco River (EDW)	Sanders Unified School District WWTP outfall at 35°12'52"/109°19'40" to 0.5 km downstream
LC	Rainbow Lake	34°09'00"/109°59'09"
LC	Reagan Reservoir	34°02'09"/109°08'41"
LC	Rio de Flag (EDW)	From City of Flagstaff WWTP outfall to the confluence with San Francisco Wash
LC	River Reservoir	34°02'01"/109°26'07"
LC	Rogers Reservoir	33°56'30"/109°16'20"
LC	Russel Reservoir	33°59'29"/109°20'01"
LC	San Salvador Reservoir	33°58'51"/109°19'55"
LC	Slade Reservoir	33°59'41"/109°20'26"
LC	Soldiers Annex Lake	34°47'15"/111°13'51"
LC	Soldiers Lake	34°47'47"/111°14'04"
LC	Spaulding Tank	34°30'17"/111°02'06"
LC	St Johns Reservoir (Little Reservoir)	34°29'10"/109°22'06"
LC	Telephone Lake (EDW)	34°17'35"/110°02'42"
LC	Tremaine Lake	34°46'02"/111°13'51"
LC	Tunnel Reservoir	34°01'53"/109°26'34"
LC	Turkey Draw (EDW)	High Country Pines II WWTP outfall at 33°25'35"/ 110°38'13" to confluence with Black Canyon Creek
LC	Unnamed Wash to Pierce Wash (EDW)	Bison Ranch WWTP outfall at 34°23'31"/110°31'29" to Pierce Seep
LC	Unnamed wash, tributary to Rio de Flag River (Bow and Arrow Wash)	Treated municipal wastewater is piped from the Rio de Flag WWTP through a city-wide reuse system to the main effluent storage pond that is in an unnamed wash.
LC	Walnut Creek	Headwaters to confluence with Billy Creek

LC	Water Canyon Creek	Headwaters to confluence with the Little Colorado River
LC	Whale Lake (EDW)	35°11'13"/111°35'21"
LC	Whipple Lake	34°16'49"/109°58'29"
LC	White Mountain Reservoir	34°00'12"/109°30'39"
LC	Willow Creek	Headwaters to confluence with Clear Creek
LC	Willow Springs Canyon Creek	Headwaters to confluence with Chevelon Creek
LC	Willow Springs Lake	34°18'13"/110°52'16"
LC	Woodland Reservoir	34°07'35"/109°57'01"
LC	Woods Canyon Creek	Headwaters to confluence with Chevelon Creek
LC	Woods Canyon Lake	34°20'09"/110°56'45"
MG	Agua Fria River	Headwaters to confluence with unnamed tributary at 34°35'14"/112°16'18"
MG	Agua Fria River	Below Lake Pleasant to the City of El Mirage WWTP at ' 33°34'20"/112°18'32"
MG	Agua Fria River	Below 2 km downstream of the City of El Mirage WWTP to City of Avondale WWTP outfall at 33°23'55"/112°21'16"
MG	Agua Fria River	From City of Avondale WWTP outfall to confluence with Gila River
MG	Agua Fria River (EDW)	Below confluence with unnamed tributary to State Route 169
MG	Agua Fria River (EDW)	From City of El Mirage WWTP outfall to 2 km downstream
MG	Andorra Wash	Headwaters to confluence with Cave Creek Wash
MG	Antelope Creek	Headwaters to confluence with Martinez Creek
MG	Arlington Canal	From Gila River at 33°20'54"/112°35'39" to Gila River at 33°13'44"/112°46'15"
MG	Arnett Creek	Headwaters to Queen Creek @ 33°16'43.24"/111°10'12.49"
MG	Ash Creek	Headwaters to confluence with Tex Canyon
MG	Beehive Tank	32°52'37"/111°02'20"
MG	Big Bug Creek	Headwaters to confluence with Eugene Gulch
MG	Big Bug Creek	Below confluence with Eugene Gulch to confluence with Agua Fria River
MG	Black Canyon Creek	Headwaters to confluence with the Agua Fria River

MG	Blind Indian Creek	Headwaters to confluence with the Hassayampa River
MG	Cash Gulch	Headwaters to Jersey Gulch @ 34°25'31.39"/112°25'30.96"
MG	Cave Creek	Headwaters to the Cave Creek Dam
MG	Cave Creek	Cave Creek Dam to the Arizona Canal
MG	Centennial Wash	Headwaters to confluence with the Gila River at 33°16'32"/112°48'08"
MG	Centennial Wash Ponds	33°54'52"/113°23'47"
MG	Chaparral Park Lake	Hayden Road & Chaparral Road, Scottsdale at 33°30'40"/111°54'27"
MG	Corgett Wash	From Corgett Wash WRF outfall at 33°21'42", -112°27'05" to Gila River. The discharge point is 0.5 miles from the ephemeral conveyance Corgett Wash. The Gila River is then 1.5 miles downstream from Corgett Wash.
MG	Devils Canyon	Headwaters to confluence with Mineral Creek
MG	Eldorado Park Lake	Miller Road & Oak Street, Tempe at 33°28'25"/ 111°54'53"
MG	Eugene Gulch	Headwaters to Big Bug Creek @ 34°27'11.51"/112°18'30.95"
MG	French Gulch	Headwaters to confluence with Hassayampa River
MG	Galena Gulch	Headwaters to confluence with the Agua Fria River
MG	Galloway Wash (EDW)	Town of Cave Creek WWTP outfall at 33°50'15"/ 111°57'35" to confluence with Cave Creek
MG	Gila River	Ashurst-Hayden Dam to the Town of Florence WWTP outfall at 33°02'20"/111°24'19"
MG	Gila River	Felix Road to the Gila River Indian Reservation boundary
MG	Gila River	Gillespie Dam to confluence with Painted Rock Dam
MG	Gila River (EDW)	Town of Florence WWTP outfall to Felix Road
MG	Groom Creek	Headwaters to confluence with the Hassayampa River
MG	Hassayampa River	Below confluence with unnamed tributary to confluence with unnamed tributary at 33°51"52"/112°39'56".
MG	Hassayampa River	Below Buckeye Irrigation Company canal to the Gila River
MG	Hassayampa River	From City of Buckeye-Palo Verde Road WWTP outfall at 33° 23' 54.3", -112° 40' 33.7" to Buckeye Canal
MG	Horsethief Lake	34°09'42"/112°17'57"

MG	Indian Bend Wash	Headwaters to confluence with the Salt River
MG	Indian Bend Wash Lakes	Scottsdale at 33°30'32"/111°54'24"
MG	Indian School Park Lake	Indian School Road & Hayden Road, Scottsdale at 33°29'39"/111°54'37"
MG	Jersey Gulch	Headwaters to Hassayampa River @ 34°25'40.16"/112°25'45.64"
MG	Kiwanis Park Lake	6000 South Mill Avenue, Tempe at 33°22'27"/111°56'22"
MG	Lake Pleasant, Lower	33°50'32"/112°16'03"
MG	Lion Canyon	Headwaters to confluence with Weaver Creek
MG	Lynx Creek	Headwaters to confluence with unnamed tributary at 34°34'29"/112°21'07"
MG	Lynx Creek	Below confluence with unnamed tributary at 34°34'29"/112°21'07" to confluence with Agua Fria River
MG	Lynx Lake	34°31'07"/112°23'07"
MG	Martinez Canyon	Headwaters to confluence with Box Canyon
MG	Martinez Creek	Headwaters to confluence with the Hassayampa River
MG	McKellips Park Lake	Miller Road & McKellips Road, Scottsdale at 33°27'14"/111°54'49"
MG	McMicken Wash (EDW)	City of Peoria Jomax WWTP outfall at 33°43'31"/ 112°20'15" to confluence with Agua Fria River
MG	Mineral Creek	Headwaters to 33°12'34"/110°59'58"
MG	Mineral Creek	End of diversion channel to confluence with Gila River
MG	Minnehaha Creek	Headwaters to confluence with the Hassayampa River
MG	Money Metals Trib	Headwaters to Unnamed Trib (UB1)
MG	New River	Headwaters to Interstate 17 at 33°54'19.5"/112°08'46"
MG	New River	Below Interstate 17 to confluence with Agua Fria River
MG	Painted Rock Reservoir	33°04'23"/113°00'38"
MG	Papago Park Ponds	Galvin Parkway, Phoenix at 33°27'15"/111°56'45"
MG	Perry Mesa Tank	34°11'03"/112°02'01"
MG	Phoenix Area Canals	Granite Reef Dam to all municipal WTP intakes
MG	Phoenix Area Canals	Below municipal WTP intakes and all other locations

MG	Picacho Reservoir	32°51'10"/111°28'25"
MG	Poland Creek	Headwaters to confluence with Lorena Gulch
MG	Poland Creek	Below confluence with Lorena Gulch to confluence with Black Canyon Creek
MG	Queen Creek	Headwaters to the Town of Superior WWTP outfall at 33°16'33"/111°07'44"
MG	Queen Creek	Below Potts Canyon to ' Whitlow Dam
MG	Queen Creek	Below Whitlow Dam to confluence with Gila River
MG	Queen Creek (EDW)	Below Town of Superior WWTP outfall to confluence with Potts Canyon
MG	Salt River	2 km below Granite Reef Dam to City of Mesa NW WRF outfall at 33°26'22"/111°53'14"
MG	Salt River	Below Tempe Town Lake to Interstate 10 bridge
MG	Salt River	Below Interstate 10 bridge to the City of Phoenix 23rd Avenue WWTP outfall at 33°24'44"/ 112°07'59"
MG	Salt River (EDW)	City of Mesa NW WRF outfall to Tempe Town Lake
MG	Salt River (EDW)	From City of Phoenix 23rd Avenue WWTP outfall to confluence with Gila River
MG	Siphon Draw (EDW)	Superstition Mountains CFD WWTP outfall at 33°21'40"/111°33'30" to 6 km downstream
MG	Sycamore Creek	Headwaters to confluence with Tank Canyon
MG	Sycamore Creek	Below confluence with Tank Canyon to confluence with Agua Fria River
MG	The Lake Tank	32°54'14"/111°04'15"
MG	Tule Creek	Headwaters to confluence with the Agua Fria River
MG	Turkey Creek	Below confluence with unnamed tributary to confluence with Poland Creek
MG	Unnamed Trib (UQ2) to Queen Creek	Headwaters to Queen Creek @ 33°18'26.15"/111°04'19.3"
MG	Unnamed Trib (UQ3) to Queen Creek	Headwaters to Queen Creek @ 33°18'33.75"/111°04'02.61"
MG	Unnamed Trib to Big Bug Creek (UB1)	Headwaters to Big Bug Creek @ 34°25'38.86"/112°22'29.32"
MG	Unnamed Trib to Eugene Gulch	Headwaters to Eugene Gulch @ 34°27'34.6"/112°20'24.53"
MG	Unnamed Trib to Lynx Creek	Headwaters to Superior Mining Div. Outfall @ Lynx Creek @ 34°27'10.57"/112°23'14.22"

MG	Unnamed tributary to Deadman's Wash	From EPCOR Water Anthem Water Campus WWTP outfall at 33° 50' 47.9", -112° 08' 25.6" to Deadman's Wash
MG	Unnamed tributary to Gila River (EDW)	Gila Bend WWTP outfall to confluence with the Gila River
MG	Unnamed tributary to Gila River (EDW)	North Florence WWTP outfall at 33°03'50"/ 111°23'13" to confluence with Gila River
MG	Unnamed tributary to the Agua Fria River	From Softwinds WWTP outfall at 34˚ 32' 43", -112˚ 14' 21" to the Agua Fria River. Discharges to Agua Fria which is a jurisdictional tributary to Lake Pleasant (TNW)
MG	Unnamed tributary to Winters Wash	From Balterra WWTP outfall at 33º 29' 45", -112º 55' 10" to Winters Wash
MG	Unnamed Wash (EDW)	Luke Air Force Base WWTP outfall at 33°32'21"/112°19'15" to confluence with the Agua Fria River
MG	Unnamed Wash (EDW)	Town of Prescott Valley WWTP outfall at34°35'16"/ 112°16'18" to confluence with the Agua Fria River
MG	Unnamed Wash (EDW)	Town of Cave Creek WRF outfall at 33°48'02"/ 111°59'22" to confluence with Cave Creek
MG	Unnamed wash, tributary to Black Canyon Creek	From Black Canyon Ranch RV Resort WWTP outfall to Agua Fria River.
MG	Unnamed wash, tributary to Queen Creek	Queen Creek, AZ15050100-013B is closest WBID to outfall coordinates
MG	Unnamed wash, tributary to Waterman Wash	The Rainbow Valley outfall discharges to an unnamed wash to Waterman wash to the Gila River.
MG	Wagner Wash (EDW)	City of Buckeye Festival Ranch WRF outfall at 33°39'14"/112°40'18" to 2 km downstream
MG	Walnut Canyon Creek	Headwaters to confluence with the Gila River
MG	Weaver Creek	Headwaters to confluence with Antelope Creek, tributary to Martinez Creek
MG	White Canyon	Headwaters to confluence with Walnut Canyon Creek
MG	Yavapai Lake (EDW)	Town of Prescott Valley WWTP outfall 002 at 34°36'07"/112°18'48" to Navajo Wash
SC	Agua Caliente Lake	12325 East Roger Road, Tucson 32°16'51"/ 110°43'52"
SC	Agua Caliente Wash	Headwaters to confluence with Soldier Trail
SC	Agua Caliente Wash	Below Soldier Trail to confluence with Tanque Verde Creek
SC	Aguirre Wash	From the Tohono O'odham Indian Reservation boundary to 32°28'38"/111°46'51"
SC	Alambre Wash	Headwaters to confluence with Brawley Wash

SC	Alamo Wash	Headwaters to confluence with Rillito Creek
SC	Altar Wash	Headwaters to confluence with Brawley Wash
SC	Alum Gulch	Headwaters to 31°28'20"/110°43'51"
SC	Alum Gulch	From 31°28'20"/110°43'51" to 31°29'17"/110°44'25"
SC	Arivaca Creek	Headwaters to confluence with Altar Wash
SC	Arivaca Lake	31°31'52"/111°15'06"
SC	Atterbury Wash	Headwaters to confluence with Pantano Wash
SC	Bear Grass Tank	31°33'01"/111°11'03"
SC	Big Wash	Headwaters to confluence with Cañada del Oro
SC	Black Wash (EDW)	Pima County WWMD Avra Valley WWTP outfall at 32°09'58"/111°11'17" to confluence with Brawley Wash
SC	Bog Hole Tank	31°28'36"/110°37'09"
SC	Brawley Wash	Headwaters to confluence with Los Robles Wash
SC	Cañada del Oro	Headwaters to State Route 77
SC	Cañada del Oro	Below State Route 77 to confluence with the Santa Cruz River
SC	Cienega Creek	Headwaters to confluence with Gardner Canyon
SC	Davidson Canyon	Headwaters to unnamed spring at 31°59'00"/ 110°38'49"
SC	Davidson Canyon (OAW)	From unnamed Spring to confluence with unnamed tributary at 31°59'09"/110°38'44"
SC	Davidson Canyon (OAW)	Below confluence with unnamed tributary to unnamed spring at 32°00'40"/110°38'36"
SC	Davidson Canyon (OAW)	From unnamed spring to confluence with Cienega Creek
SC	Empire Gulch	Headwaters to unnamed spring at 31°47'18"/ 110°38'17"
SC	Empire Gulch	From 31°47'18"/110°38'17" to 31°47'03"/110°37'35"
SC	Empire Gulch	From 31°47'03"/110°37'35" to 31°47'05"/ 110°36'58"
SC	Empire Gulch	From 31°47'05"/110°36'58" to confluence with Cienega Creek
SC	Flux Canyon	Headwaters to confluence with Alum Gulch
SC	Gardner Canyon Creek	Headwaters to confluence with Sawmill Canyon
SC	Gardner Canyon Creek	Below Sawmill Canyon to confluence with Cienega Creek

SC	Greene Wash	Santa Cruz River to the Tohono O'odham Indian Reservation boundary
SC	Greene Wash	Tohono O'odham Indian Reservation boundary to confluence with Santa Rosa Wash at 32°53'52"/ 111°56'48"
SC	Harshaw Creek	Headwaters to confluence with Sonoita Creek at
SC	Hit Tank	32°43'57"/111°03'18"
SC	Holden Canyon Creek	Headwaters to U.S./Mexico border
SC	Huachuca Tank	31°21'11"/110°30'18"
SC	Humboldt Canyon	Headwaters to Alum Gulch @ 31°28'25.84"/110°44'01.57"
SC	Julian Wash	Headwaters to confluence with the Santa Cruz River
SC	Kennedy Lake	Mission Road & Ajo Road, Tucson at 32°10'49"/ 111°00'27"
SC	Lakeside Lake	8300 East Stella Road, Tucson at 32°11'11"/ 110°49'00"
SC	Lemmon Canyon Creek	Headwaters to confluence with unnamed tributary at 32°23'48"/110°47'49"
SC	Lemmon Canyon Creek	Below unnamed tributary at 32°23'48"/110°47'49" to confluence with Sabino Canyon Creek
SC	Los Robles Wash	Headwaters to confluence with the Santa Cruz River
SC	Madera Canyon Creek	Headwaters to confluence with unnamed tributary at 31°43'42"/110°52'51"
SC	Madera Canyon Creek	Below unnamed tributary at 31°43'42"/110°52'51 to confluence with the Santa Cruz River
SC	Mattie Canyon	Headwaters to confluence with Cienega Creek
SC	Oak Tree Canyon	Headwaters to confluence with Cienega Creek
SC	Palisade Canyon	Headwaters to confluence with unnamed tributary at 32°22'33"/110°45'31"
SC	Palisade Canyon	Below 32°22'33"/110°45'31" to unnamed tributary of Sabino Canyon
SC	Pantano Wash	Headwaters to confluence with Tanque Verde Creek
SC	Parker Canyon Creek	Headwaters to confluence with unnamed tributary at 31°24'17"/110°28'47"
SC	Parker Canyon Lake	31°25'35"/110°27'15"
SC	Patagonia Lake	31°29'56"/110°50'49"
SC	Peña Blanca Lake	31°24'15"/111°05'12"
SC	Potrero Creek	Headwaters to Interstate 19

SC	Potrero Creek	Below Interstate 19 to confluence with Santa Cruz River
SC	Puertocito Wash	Headwaters to confluence with Altar Wash
SC	Quitobaquito Spring	(Pond and Springs) 31°56'39"/113°01'06"
SC	Redrock Canyon Creek	Headwaters to confluence with Harshaw Creek
SC	Rillito Creek	Headwaters to confluence with the Santa Cruz River
SC	Romero Canyon Creek	Headwaters to confluence with unnamed tributary at 32°24'29"/110°50'39"
SC	Rose Canyon Creek	Headwaters to confluence with Sycamore Canyon
SC	Rose Canyon Lake	32°23'13"/110°42'38"
SC	Ruby Lakes	31°26'29"/111°14'22"
SC	Sabino Creek	Headwaters to 32°23'20"/110°47'06"
SC	Sabino Creek	Below 32°23'20"/110°47'06" to confluence with Tanque Verde River
SC	Salero Ranch Tank	31°35'43"/110°53'25"
SC	Santa Cruz River	Headwaters to the at U.S./Mexico border
SC	Santa Cruz River	Baumgartner Road to the Ak Chin Indian Reservation boundary
SC	Santa Cruz River (EDW)	Nogales International WWTP outfall to the Tubac Bridge
SC	Santa Cruz River, West Branch	Headwaters to the confluence with Santa Cruz River
SC	Santa Cruz Wash, North Branch	Headwaters to City of Casa Grande WRF outfall at 32°54'57"/111°47'13"
SC	Santa Cruz Wash, North Branch (EDW)	City of Casa Grande WRF outfall to 1 km downstream
SC	Santa Rosa Wash	Below Tohono O'odham Indian Reservation to the Ak Chin Indian Reservation
SC	Santa Rosa Wash (EDW)	Palo Verde Utilities CO-WRF outfall at 33°04'20"/ 112°01'47" to the Chin Indian Reservation
SC	Soldier Tank	32°25'34"/110°44'43"
SC	Sonoita Creek	Headwaters to the Town of Patagonia WWTP outfall at 31°32'25"/110°45'31"
SC	Sonoita Creek	Below 1600 feet downstream of Town of Patagonia WWTP outfall groundwater upwelling point to confluence with the Santa Cruz River
SC	Split Tank	31°28'11"/111°05'12"
SC	Sutherland Wash	Headwaters to confluence with Cañada del Oro
SC	Sycamore Canyon	Headwaters to 32°21'60" / 110°44'48"

SC	Sycamore Canyon	From 32°21'60" / 110°44'48" to Sycamore Reservoir
SC	Sycamore Reservoir	32°20'57'/110°47'38"
SC	Tanque Verde Creek	Headwaters to Houghton Road
SC	Tanque Verde Creek	Below Houghton Road to confluence with Rillito Creek
SC	Three R Canyon	Headwaters to Unnamed Trib to Three R Canyon at 31°28'26"/110°46'04"
SC	Three R Canyon	From 31°28'26"/110°46'04" to 31°28'28"/110°47'15" (Cox Gulch)
SC	Three R Canyon	From (Cox Gulch) 31°28'28"/110°47'15" to confluence with Sonoita Creek
SC	Tinaja Wash	Headwaters to confluence with the Santa Cruz River
SC	Unnamed Trib (Endless Mine Tributary) to Harshaw Creek	Headwaters to Harshaw Creek @ 31°26'12.3"/110°43'27.26"
SC	Unnamed Trib (UA2) to Alum Gulch	Headwaters to Alum Gulch @ 31°28'49.67"/110°44'12.86"
SC	Unnamed Trib to Cox Gulch	Headwaters to Cox Gulch @ 31°27'53.86"/110°46'51.29"
SC	Unnamed Trib to Three R Canyon	Headwaters to Three R Canyon @ 31°28'25.82"/110°46'04.11"
SC	Unnamed Wash to Canada Del Oro (EDW)	Oracle Sanitary District WWTP outfall at 32°36'54"/ 110°48'02" to 5 km downstream
SC	Unnamed Wash to Canada del Oro (EDW)	Saddlebrook WWTP outfall at 32°32'00"/110°53'01" to confluence with Cañada del Oro
SC	Unnamed Wash to Santa Cruz Wash (EDW)	Arizona City Sanitary District WWTP outfall at 32°45'43"/111°44'24" to confluence with Santa Cruz Wash
SC	Vekol Wash	Headwater to Santa Cruz Wash: Those reaches not located on the Ak-Chin, Tohono O'odham and Gila River Indian Reservations
SC	Wakefield Canyon	Headwaters to confluence with unnamed tributary at 31°52'48"/110°26'27"
SC	Wakefield Canyon	Below confluence with unnamed tributary to confluence with Cienega Creek
SC	Wild Burro Canyon	Headwaters to confluence with unnamed tributary at 32°27'43"/111°05'47"
SC	Wild Burro Canyon	Below confluence with unnamed tributary to confluence with Santa Cruz River
SP	Abbot Canyon	Headwaters to confluence with Whitewater Draw
SP	Aravaipa Creek	Headwaters to confluence with Stowe Gulch
SP	Ash Creek	Headwaters to 31°50'28"/109°40'04"

SP	Babocomari River	Headwaters to confluence with the San Pedro River
SP	Bass Canyon Creek	Headwaters to confluence with unnamed tributary at 32°26'06"/110°13'22"
SP	Bass Canyon Tank	32°24'00"/110°13'00"
SP	Blacktail Pond	Fort Huachuca Military Reservation at 31°31'04"/110°24'47", headwater lake in Blacktail Canyon
SP	Booger Canyon	Headwaters to confluence with Aravaipa Creek
SP	Brewery Gulch	Headwaters to Mule Gulch @ 31°26'27.88"/109°54'48.1"
SP	Buck Canyon	Headwaters to confluence with Buck Creek Tank
SP	Buck Canyon	Below Buck Creek Tank to confluence with Dry Creek
SP	Buehman Canyon Creek	Below confluence with unnamed tributary to confluence with San Pedro River
SP	Buehman Canyon Creek (OAW)	Headwaters to confluence with unnamed tributary at 32°24'54"/110°32'10"
SP	Bullock Canyon	Headwaters to confluence with Buehman Canyon
SP	Carr Canyon Creek	Below confluence with unnamed tributary to confluence with the San Pedro River
SP	Copper Creek	Headwaters to confluence with Prospect Canyon
SP	Copper Creek	Below confluence with Prospect Canyon to confluence with the San Pedro River
SP	Curry Draw	Headwaters to San Pedro River
SP	Deer Creek	Headwaters to confluence with unnamed tributary at 32°59'57"/110°20'11"
SP	Deer Creek	Below confluence with unnamed tributary to confluence with Aravaipa Creek
SP	Dixie Canyon	Headwaters to confluence with Mexican Canyon
SP	Double R Canyon Creek	Headwaters to confluence with Bass Canyon
SP	Dry Canyon	Headwaters to confluence with Whitewater draw
SP	East Gravel Pit Pond	Fort Huachuca Military Reservation at 31°30'54"/ 110°19'44"
SP	Espiritu Canyon Creek	Headwaters to confluence with Soza Wash
SP	Fourmile Canyon Creek	Headwaters to confluence with Aravaipa Creek
SP	Fourmile Canyon, Left Prong	Headwaters to confluence with unnamed tributary at 32°43'15"/110°23'46"
SP	Fourmile Canyon, Left Prong	Below confluence with unnamed tributary to confluence with Fourmile Canyon Creek
SP	Fourmile Canyon, Right Prong	Headwaters to confluence with Fourmile Canyon

SP	Gadwell Canyon	Headwaters to confluence with Whitewater Draw
SP	Garden Canyon Creek	Headwaters to confluence with unnamed tributary at 31°29'01"/110°19'44"
SP	Garden Canyon Creek	Below confluence with unnamed tributary to confluence with the San Pedro River
SP	Glance Creek	Headwaters to confluence with Whitewater Draw
SP	Gravel Pit Pond	Fort Huachuca Military Reservation at 31°30'52"/ 110°19'49"
SP	Greenbush Draw	From U.S./Mexico border to confluence with San Pedro River
SP	Greenbush Draw	From City of Bisbee San Jose WWTP outfall at 31˚ 20' 35.4", -109˚ 56' 10.2" to San Pedro River. The City of Bisbee San Jose WWTP outfall discharges to Greenbush Draw.
SP	Hidden Pond	Fort Huachuca Military Reservation at 32°30'30"/ 109°22'17"
SP	Horse Camp Canyon	Headwaters to confluence with Aravaipa Creek
SP	Hot Springs Canyon	Headwaters to confluence with the San Pedro River
SP	Johnson Canyon	Headwaters to Whitewater Draw at 31°32'46"/ 109°43'32"
SP	Leslie Creek	Headwaters to confluence with Whitewater Draw
SP	Lower Garden Canyon Pond	Fort Huachuca Military Reservation at 31°29'39"/ 110°18'34"
SP	Mexican Canyon	Headwaters to confluence with Dixie Canyon
SP	Miller Canyon	Headwaters to Broken Arrow Ranch Road at 31°25'35"/110°15'04"
SP	Miller Canyon	Below Broken Arrow Ranch Road to confluence with the San Pedro River
SP	Montezuma Creek	Headwaters to Mexico Border @ 31°20'01.87"/110°13'40.97"
SP	Mountain View Golf Course Pond	Fort Huachuca Military Reservation at 31°32'14"/ 110°18'52"
SP	Mule Gulch	Headwaters to the Lavender Pit at 31°26'11"/ 109°54'02"
SP	Mule Gulch	The Lavender Pit to the' Highway 80 bridge at 31°26'30"/109°49'28"
SP	Mule Gulch	Below the Highway 80 bridge to confluence with Whitewater Draw
SP	Oak Grove Canyon	Headwaters to confluence with Turkey Creek
SP	Officers Club Pond	Fort Huachuca Military Reservation at 31°32'51"/ 110°21'37"

SP	Paige Canyon Creek	Headwaters to confluence with the San Pedro River
SP	Parsons Canyon	Headwaters to confluence with Aravaipa Creek
SP	Ramsey Canyon Creek	Headwaters to Forest Service Road #110 at 31°27'44"/110°17'30"
SP	Rattlesnake Creek	Headwaters to confluence with Brush Canyon
SP	Rattlesnake Creek	Below confluence with Brush Canyon to confluence with Aravaipa Creek
SP	Redfield Canyon	Headwaters to confluence with unnamed tributary at 32°33'40"/110°18'42"
SP	Redfield Canyon	Below confluence with unnamed tributary to confluence with the San Pedro River
SP	Rucker Canyon	Headwaters to confluence with Whitewater Draw
SP	Rucker Canyon Lake	31°46'46"/109°18'30"
SP	Soto Canyon	Headwaters to confluence with Dixie Canyon
SP	Swamp Springs Canyon Creek	Headwaters to confluence with Redfield Canyon
SP	Sycamore Pond I	Fort Huachuca Military Reservation at 31°35'12"/ 110°26'11"
SP	Sycamore Pond II	Fort Huachuca Military Reservation at 31°34'39"/ 110°26'10"
SP	Turkey Creek	Headwaters to confluence with Aravaipa Creek
SP	Unnamed Wash Mt. Lemmon (EDW)	Mt. Lemmon WWTP outfall at 32°26'51"/110°45'08" to 0.25 km downstream
SP	Virgus Canyon	Headwaters to confluence with Aravaipa Creek
SP	Walnut Gulch	Headwaters to Tombstone WWTP outfall at 31°43'47"/110°04'06"
SP	Walnut Gulch	Tombstone Wash to confluence with San Pedro River
SP	Walnut Gulch (EDW)	Tombstone WWTP outfall to the confluence with Tombstone Wash
SP	Woodcutters Pond	Fort Huachuca Military Reservation at 31°30'09"/ 110°20'12"
SR	Barnhard Creek	Headwaters to confluence with unnamed tributary at 34°05'37/111°26'40"
SR	Barnhardt Creek	Below confluence with unnamed tributary to confluence with Rye Creek
SR	Basin Lake	33°55'00"/109°26'09"
SR	Bear Creek	Headwaters to confluence with the Black River
SR	Bear Wallow Creek, North Fork (OAW)	Headwaters to confluence with the Bear Wallow Creek

SR	Bear Wallow Creek, South Fork (OAW)	Headwaters to confluence with the Bear Wallow Creek
SR	Big Lake	33°52'36"/109°25'33"
SR	Bloody Tanks Wash	Headwaters to Schultze Ranch Road
SR	Bloody Tanks Wash	Schultze Ranch Road to confluence with Miami Wash
SR	Boulder Creek	Headwaters to confluence with LaBarge Creek
SR	Campaign Creek	Headwaters to Roosevelt Lake
SR	Canyon Creek	Headwaters to the White Mountain Apache Reservation boundary
SR	Centerfire Creek	Headwaters to confluence with the Black River
SR	Chambers Draw Creek	Headwaters to confluence with the North Fork of the East Fork of Black River
SR	Cherry Creek	Headwaters to confluence with unnamed tributary at 34°05'09"/110°56'07"
SR	Christopher Creek	Headwaters to confluence with Tonto Creek
SR	Cold Spring Canyon Creek	Headwaters to confluence with unnamed tributary at 33°49'50"/110°52'58"
SR	Cold Spring Canyon Creek	Below confluence with unnamed tributary to confluence with Cherry Creek
SR	Coon Creek	Headwaters to confluence with unnamed tributary at 33°46'41"/110°54'26"
SR	Coon Creek	Below confluence with unnamed tributary to confluence with Salt River
SR	Coyote Creek	Headwaters to confluence with the Black River, East Fork
SR	Deer Creek (D2E)	Headwaters to confluence with the Black River, East Fork
SR	Del Shay Creek	Headwaters to confluence with Gun Creek
SR	Devils Chasm Creek	Headwaters to confluence with unnamed tributary at 33°48'46" /110°52'35"
SR	Dipping Vat Reservoir	33°55'47"/109°25'31"
SR	Double Cienega Creek	Headwaters to confluence with Fish Creek
SR	Fish Creek	Headwaters to confluence with the Salt River
SR	Five Point Mountain Tributary	Headwaters to Pinto Creek @ 33°22'25.93"/110°58'14"
SR	Gibson Mine Tributary	Headwaters to Pinto Creek @ 33°20'48.99"/110°56'42.31"
SR	Gold Creek	Headwaters to confluence with unnamed tributary at 33°59'47"/111°25'10"

SR	Gold Creek	Below confluence with unnamed tributary to confluence with Tonto Creek
SR	Gordon Canyon Creek	Headwaters to confluence with Hog Canyon
SR	Gordon Canyon Creek	Below confluence with Hog Canyon to confluence with Haigler Creek
SR	Greenback Creek	Headwaters to confluence with Tonto Creek
SR	Home Creek	Headwaters to confluence with the Black River, West Fork
SR	Horse Camp Creek	Headwaters to confluence with unnamed tributary at 33°54'00"/110°50'07"
SR	Horse Camp Creek	Below confluence with unnamed tributary to confluence with Cherry Creek
SR	Houston Creek	Headwaters to confluence with Tonto Creek
SR	Hunter Creek	Headwaters to confluence with Christopher Creek
SR	LaBarge Creek	Headwaters to Canyon Lake
SR	Lake Sierra Blanca	33°52'25"/109°16'05"
SR	Miami Wash	Headwaters to confluence with Pinal Creek
SR	Mule Creek	Headwaters to confluence with Canyon Creek
SR	Open Draw Creek	Headwaters to confluence with the East Fork of Black River
SR	P B Creek	Headwaters to Forest Service Road #203 at 33°57'08"/110°56'12"
SR	Pinal Creek	Headwaters to confluence with unnamed EDW wash (Globe WWTP) at 33°25'29"/110°48'20"
SR	Pinal Creek	From 33°26'55"/110°49'25" to Lower Pinal Creek water treatment plant outfall #001 at 33°31'04"/ 110°51'55"
SR	Pinal Creek	From See Ranch Crossing to confluence with unnamed tributary at 33°35'28"/110°54'31"
SR	Pinal Creek (EDW)	Confluence with unnamed EDW wash (Globe WWTP) to 33°25'29"/110°48'20"
SR	Pine Creek	Headwaters to confluence with the Salt River
SR	Pinto Creek	Below confluence with unnamed tributary to Roosevelt Lake
SR	Pole Corral Lake	33°30'38"/110°00'15"
SR	Pueblo Canyon Creek	Headwaters to confluence with unnamed tributary at 33°50'23"/110°51'37"
SR	Pueblo Canyon Creek	Below confluence with unnamed tributary to confluence with Cherry Creek
SR	Reevis Creek	Headwaters to confluence with Pine Creek

SR	Reservation Creek	Headwaters to confluence with the Black River
SR	Reynolds Creek	Headwaters to confluence with Workman Creek
SR	Russell Gulch	From Headwaters to confluence with Miami Wash
SR	Salome Creek	Headwaters to confluence with the Salt River
SR	Salt House Lake	33°57'04"/109°20'11"
SR	Slate Creek	Headwaters to confluence with Tonto Creek
SR	Snake Creek (OAW)	Headwaters to confluence with the Black River
SR	Spring Creek	Headwaters to confluence with Tonto Creek
SR	Stinky Creek (OAW)	Headwaters to confluence with the Black River, West Fork
SR	Thomas Creek	Headwaters to confluence with Beaver Creek
SR	Thompson Creek	Headwaters to confluence with the West Fork of the Black River
SR	Turkey Creek	Headwaters to confluence with Rock Creek
SR	Unnamed trib to Black River North Fork East Fork	Headwaters to Black River NF of EF
SR	Wildcat Creek	Headwaters to confluence with Centerfire Creek
SR	Workman Creek	Below confluence with Reynolds Creek to confluence with Salome Creek
UG	Ash Creek	Headwaters to confluence with unnamed tributary at 32°46'15"/109°51'45"
UG	Ash Creek	Below confluence with unnamed tributary to confluence with the Gila River
UG	Bennett Wash	Headwaters to the Gila River
UG	Buckelew Creek	Headwaters to confluence with Castle Creek
UG	Castle Creek	Headwaters to confluence with Campbell Blue Creek
UG	Cave Creek	Below Coronado National Forest boundary to New Mexico border
UG	Chase Creek	Headwaters to the Phelps-Dodge Morenci Mine
UG	Chase Creek	Below the Phelps-Dodge Morenci Mine to confluence with San Francisco River
UG	Chitty Canyon Creek	Headwaters to confluence with Salt House Creek
UG	Cima Creek	Headwaters to confluence with Cave Creek
UG	Cluff Reservoir #1	32°48'55"/109°50'46"
UG	Cluff Reservoir #3	32°48'21"/109°51'46"
UG	Coleman Creek	Headwaters to confluence with Campbell Blue Creek
UG	Dankworth Lake	32°43'13"/109°42'17"

UG	Deadman Canyon Creek	Below confluence with unnamed tributary to confluence with Graveyard Wash
UG	Eagle Creek	Headwaters to confluence with unnamed tributary at 33°22'32"/109°29'43"
UG	East Eagle Creek	Headwaters to confluence with Eagle Creek
UG	East Turkey Creek	Headwaters to confluence with unnamed tributary at 31°58'22"/109°12'20"
UG	East Turkey Creek	Below confluence with unnamed tributary to terminus near San Simon River
UG	East Whitetail	Headwaters to terminus near San Simon River
UG	Emigrant Canyon	Headwaters to terminus near San Simon River
UG	Evans Pond #1	32°49'19"/109°51'12"
UG	Evans Pond #2	32°49'14"/109°51'09"
UG	Fishhook Creek	Headwaters to confluence with the Blue River
UG	Foote Creek	Headwaters to confluence with the Blue River
UG	Frye Canyon Creek	Headwaters to Frye Mesa Reservoir
UG	Frye Canyon Creek	Frye Mesa reservoir to terminus at Highline Canal.
UG	Frye Mesa Reservoir	32°45'14"/109°50'02"
UG	Georges Tank	33°51'24"/109°08'30"
UG	Gibson Creek	Headwaters to confluence with Marijilda Creek
UG	Lanphier Canyon	Headwaters to confluence with the Blue River
UG	Little Blue Creek	Headwaters to confluence with Dutch Blue Creek
UG	Little Creek	Headwaters to confluence with the San Francisco River
UG	Marijilda Creek	Headwaters to confluence with Gibson Creek
UG	Marijilda Creek	Below confluence with Gibson Creek to confluence with Stockton Wash
UG	Markham Creek	Headwaters to confluence with the Gila River
UG	Pigeon Creek	Headwaters to confluence with the Blue River
UG	Roper Lake	32°45'23"/109°42'14"
UG	Sheep Tank	32°46'14"/109°48'09"
UG	Smith Pond	32°49'15"/109°50'36"
UG	Squaw Creek	Headwaters to confluence with Thomas Creek
UG	Stone Creek	Headwaters to confluence with the San Francisco River
UG	Strayhorse Creek	Headwaters to confluence with the Blue River

UG	Thomas Creek	Headwaters to confluence with Rousensock Creek
UG	Tinny Pond	33°47'49"/109°04'27"
VR	American Gulch	Headwaters to the Northern Gila County Sanitary District WWTP outfall at 34°14'02"/111°22'14"
VR	American Gulch (EDW)	Below Northern Gila County Sanitary District WWTP outfall to confluence with the East Verde River
VR	Apache Creek	Headwaters to confluence with Walnut Creek
VR	Ashbrook Wash	Headwaters to the Fort McDowell Indian Reservation boundary
VR	Aspen Creek	Headwaters to confluence with Granite Creek
VR	Banning Creek	Headwaters to Granite Creek @ 34°31'01.02"/112°28'37.63"
VR	Bar Cross Tank	35°00'41"/112°05'39"
VR	Barrata Tank	35°02'43"/112°24'21"
VR	Big Chino Wash	Headwaters to confluence with Sullivan Lake
VR	Bitter Creek	Headwaters to the Jerome WWTP outfall at 34°45'12"/112°06'24"
VR	Bitter Creek (EDW)	Jerome WWTP outfall to the Yavapai Apache Indian Reservation boundary
VR	Black Canyon Creek	Headwaters to confluence with unnamed tributary at 34°39'20"/112°05'06"
VR	Black Canyon Creek	Below confluence with unnamed tributary to confluence with the Verde River
VR	Bonita Creek	Headwaters to confluence with Ellison Creek
VR	Bray Creek	Headwaters to confluence with Webber Creek
VR	Butte Creek	Headwaters to Miller Creek @ 34°32'49.03"/112°28'29.3"
VR	Camp Creek	Headwaters to confluence with Verde River
VR	Cereus Wash	Headwaters to the Fort McDowell Indian Reservation boundary
VR	Chase Creek	Headwaters to confluence with the East Verde River
VR	Clover Creek	Headwaters to confluence with Headwaters of West Clear Creek
VR	Coffee Creek	Headwaters to confluence with Spring Creek
VR	Colony Wash	Headwaters to the Fort McDowell Indian Reservation boundary
VR	Deadman Creek	Headwaters to Horseshoe Reservoir
VR	Del Monte Gulch	Headwaters to confluence with City of Cottonwood WWTP outfall 002 at

		34°43'57"/112°02'46"
VR	Del Monte Gulch (EDW)	City of Cottonwood WWTP outfall 002 at 34°43'57"/ 112°02'46" to confluence with Verde River
VR	Del Rio Dam Lake	34°48'55"/112°28'03"
VR	Dry Beaver Creek	Headwaters to confluence with Beaver Creek
VR	Dry Creek (EDW)	Sedona Ventures WWTP outfall at 34°50'42"/ 111°52'26" to 34°50'02"/ 111°52'17"
VR	Dude Creek	Headwaters to confluence with the East Verde River
VR	Ellison Creek	Headwaters to confluence with the East Verde River
VR	Foxboro Lake	34°53'42"/111°39'55"
VR	Fry Lake	35°03'45"/111°48'04"
VR	Gap Creek	Headwaters to confluence with Government Spring
VR	Gap Creek	Below Government Spring to confluence with the Verde River
VR	Garrett Tank	35°18'57"/112°42'20"
VR	Goldwater Lake, Lower	34°29'56"/112°27'17"
VR	Goldwater Lake, Upper	34°29'52"/112°26'59"
VR	Government Canyon	Headwaters to Granite Creek @ 34°33'29.49"/112°26'53.18"
VR	Granite Basin Lake	34°37'01"/112°32'58"
VR	Granite Creek	Headwaters to Watson Lake
VR	Granite Creek	Below Watson Lake to confluence with the Verde River
VR	Green Valley Lake (EDW)	34°13'54"/111°20'45"
VR	Heifer Tank	35°20'27"/112°32'59"
VR	Hells Canyon Tank	35°04'59"/112°24'07"
VR	Homestead Tank	35°21'24"/112°41'36"
VR	Horse Park Tank	34°58'15"/111°36'32"
VR	Houston Creek	Headwaters to confluence with the Verde River
VR	Huffer Tank	34°27'46"/111°23'11"
VR	J.D. Dam Lake	35°04'02"/112°01'48"
VR	Jacks Canyon	Headwaters to Big Park WWTP outfall at 34°45'46"/ 111°45'51"
VR	Jacks Canyon (EDW)	Below Big Park WWTP outfall to confluence with Dry Beaver Creek

VR	Lime Creek	Headwaters to Horseshoe Reservoir
VR	Mail Creek	Headwaters to East Verde River @ 34°25'03.88"/111°15'49.6"
VR	Manzanita Creek	Headwaters to Granite Creek @ 34°31'31.19"/112°28'44.34"
VR	Masonry Number 2 Reservoir	35°13'32"/112°24'10"
VR	McLellan Reservoir	35°13'09"/112°17'06"
VR	Meath Dam Tank	35°07'52"/112°27'35"
VR	Miller Creek	Headwaters to Granite Creek @ 34°32'48.55"/112°28'12.96"
VR	Mullican Place Tank	34°44'16"/111°36'10"
VR	Munds Creek (EDW), Tributary to Oak Creek	From Pinewood Sanitary District Kay S. Blackman WWTP outfall at 34º 56' 09", -111º 38' 35" to Oak Creek.
VR	North Fork Miller	Headwaters to Miller Creek
VR	North Granite Creek	Headwaters to Granite Creek @ 34°33'04.33"/112°27'50.45"
VR	Oak Creek, West Fork (OAW)	Headwaters to confluence with Oak Creek
VR	Odell Lake	34°56'5"/111°37'53"
VR	Peck's Lake	34°46'51"/112°02'01"
VR	Perkins Tank	35°06'42"/112°04'12"
VR	Pine Creek	Headwaters to confluence with unnamed tributary at 34°21'51"/111°26'49"
VR	Pine Creek	Below confluence with unnamed tributary to confluence with East Verde River
VR	Red Creek	Headwaters to confluence with the Verde River
VR	Reservoir #1	35°13'5"/111°50'09"
VR	Reservoir #2	35°13'17"/111°50'39"
VR	Roundtree Canyon Creek	Headwaters to confluence with Tangle Creek
VR	Scholze Lake	35°11'53"/112°00'37"
VR	Slaugterhouse Gulch	Headwaters to Yavapai Res. Boundary
VR	Spring Creek	Headwaters to confluence with unnamed tributary at 34°57'23"/111°57'21"
VR	Steel Dam Lake	35°13'36"/112°24'54"
VR	Stehr Lake	34°22'01"/111°40'02"
VR	Stoneman Lake	34°46'47"/111°31'14"
VR	Sycamore Creek	Below confluence with unnamed tributary to confluence with Verde River

VR	Sycamore Creek	Headwaters to confluence with Verde River at 34°04'42"/111°42'14"
VR	Tangle Creek	Headwaters to confluence with Verde River
VR	Trinity Tank	35°27'44"/112°48'01"
VR	Unnamed Trib to Granite Creek (UGC)	Headwaters to Yavapai Prescott Reservation Boundary
VR	Unnamed Trib to UGC (UUG)	Headwaters to Unnamed Trib to Granite Creek (UGC)
VR	Unnamed Wash	Flagstaff Meadows WWTP outfall at 35°13'53.54"/ 111°48'40.32'"to Volunteer Wash
VR	Walnut Creek	Headwaters to confluence with Big Chino Wash
VR	Watson Lake	34°34'58"/112°25'26"
VR	Webber Creek	Headwaters to confluence with the East Verde River
VR	Wet Beaver Creek	Headwaters to unnamed springs at 34°41'17"/ 111°34'34"
VR	Whitehorse Lake	35°06'59"/112°00'48"
VR	Williamson Valley Wash	Headwaters to confluence with Mint Wash
VR	Williamson Valley Wash	From confluence of Mint Wash to 10.5 km downstream
VR	Williamson Valley Wash	From 10.5 km downstream of Mint Wash confluence to confluence with Big Chino Wash
VR	Williscraft Tank	35°11'22"/112°35'40"
VR	Willow Creek	Above Willow Creek Reservoir
VR	Willow Valley Lake	34°41'08"/111°20'02"

R18-11-217. Best Management Practices for non-WOTUS Protected Surface Waters

A. The BMPs described in this rule are intended to ensure that activities within the ordinary high-water mark of perennial or intermittent non-WOTUS protected surface waters, or within the bed and bank of other waters that materially impact (i.e., are within ¼ mile upstream of) non-WOTUS protected surface waters, do not violate applicable surface water quality standards in the non-WOTUS protected surface waters. For purposes of this section, the activities described in the prior sentence will be referred to as "regulated activities." Depending on the regulated activities conducted, not all of the BMPs described below may be applicable to a particular project. The owner or operator is responsible to consider the BMPs outlined below and to implement those necessary to ensure that the regulated activities will not violate applicable surface water quality standards in the non-WOTUS protected surface water.

B. The BMPs described below are not applicable to any activities that are addressed under an individual or general AZPDES permit that are otherwise regulated under A.R.S. Title 49.

C. Erosion and sedimentation control BMPs:

1. When flow is present in any non-WOTUS protected surface waters within a project area, flow shall not be altered except to prevent erosion or pollution of any non-WOTUS protected surface waters.
2. Any disturbance within the ordinary high-water mark of non-WOTUS protected surface waters or within the bed and banks of other waters, that is not intended to be permanently altered, shall be stabilized as soon as practicable to prevent erosion and sedimentation.
3. When flow in any non-WOTUS protected surface water is sufficient to erode, carry, or deposit material, regulated activities shall cease until:
    a. The flow decreases below the point where sediment movement ceases; or
    b. Control measures have been undertaken, i.e., equipment and material easily transported by flow are protected within non-erodible barriers or moved outside the flow area.
4. Silt laden or turbid water resulting from regulated activities should be managed in a manner to reduce sediment load prior to discharging.
5. No washing or dewatering of fill material should occur within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface waters. Other than the replacement of native fill or material used to support vegetation rooting or growth, fill placed within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface water must resist washout whether such resistance is derived via particle size limits, presence of a binder, vegetation, or other armoring.

D. Pollutant management BMPs:

1. If regulated activities are likely to violate applicable surface water quality standards in a perennial or intermittent non-WOTUS protected surface water, operations shall cease until the problem is resolved or until control measures have been implemented.
2. Construction material and/or fill (other than native fill or that necessary to support revegetation) placed within surface waters as a result of regulated activities shall not include pollutants in concentrations that will violate applicable surface water quality standards in a perennial or intermittent non-WOTUS protected surface water.

E. Construction phase BMPs:

1. Equipment staging and storage areas or fuel, oil, and other petroleum products storage and solid waste containment should not be located within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface water.
2. Any equipment maintenance, washing, or fueling shall not be done within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface waters with the following exception:
    a. Equipment too large or unwieldy to be readily moved, such as large cranes, may be fueled and serviced in non-WOTUS protected surface waters (but outside of standing or flowing water) provided material specifically manufactured and sold as spill containment is in place during fueling/servicing.
3. All equipment shall be inspected for leaks, all leaks shall be repaired, and all repaired equipment shall be cleaned to remove any fuel or other fluid residue prior to use within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface waters.

4. Washout of concrete handling equipment shall not take place within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface waters.

F. Post-construction BMPs:

1. Upon completion of regulated activities, areas within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface waters shall be promptly cleared of all forms, piling, construction residues, equipment, debris, or other obstructions.
2. If fully, partially, or occasionally submerged structures are constructed of cast-in-place concrete instead of pre-cast concrete, steps will be taken using sheet piling or temporary dams to prevent contact between water (instream and runoff) and the concrete until it cures and until any curing agents have evaporated or are no longer a pollutant threat.
3. Any permanent water crossings within the ordinary high-water mark of any perennial or intermittent in a non-WOTUS protected surface water (other than fords) shall not be equipped with gutters, drains, scuppers, or other conveyances that allow untreated runoff (due to events equal to or lesser in magnitude than the design event for the crossing structure) to directly enter a non-WOTUS protected surface water if such runoff can be directed to a local stormwater drainage, containment, and/or treatment system.
4. Debris shall be cleared as needed from culverts, ditches, dips, and other drainage structures within the ordinary high-water mark of any perennial or intermittent non-WOTUS protected surface water to prevent clogging or conditions that may lead to a washout.
5. Temporary structures constructed or imported materials shall be removed no later than upon completion of the regulated activities.
6. Temporary structures constructed of native materials, if they provide an obstacle to flow or can contribute to or cause erosion, or cause changes in sediment load, shall be removed no later than upon completion of the regulated activities.

G. Design consideration BMPs:

1. All temporary structures constructed of imported materials and all permanent structures, including but not limited to, access roadways, culvert crossings, staging areas, material stockpiles, berms, dikes, and pads, shall be constructed so as to accommodate overtopping and resist washout by streamflow.
2. Any temporary crossing, other than fords on native material, shall be constructed in such a manner so as to provide armoring of the stream channel. Materials used to provide this armoring shall not include anything easily transportable by flow. Examples of acceptable materials include steel plates, untreated wooden planks, pre-cast concrete planks or blocks. Examples of unacceptable materials include clay, silt, sand, and gravel finer than cobble (roughly fist-sized). The armoring shall, via mass, anchoring systems, or a combination of the two, resist washout.

H. Notification.

1. The owner or operator of any regulated activities shall, five (5) days prior to initiation of the regulated activities, submit a notice to ADEQ on a form that includes basic information including the GPS location, the waterbody ID of the nearest non-WOTUS protected surface water, general description of planned activities, types of BMPs to be employed during the project, and phone number and email for a contact person. Work may proceed after five (5) calendar days

have passed since the owner/operator provided notification to ADEQ unless ADEQ responds in writing to the contact person for the owner/operator.

I. Exclusions:

1. The BMPS and notification requirements in this section shall not apply to:
   a. Activities that are already regulated under A.R.S. Title 49.
   b. Discharges to a non-WOTUS protected surface water incidental to a recharge project.
   c. Established or ongoing farming, ranching and silviculture activities such as plowing, seeding, cultivating, minor drainage or harvesting for the production of food, fiber or forest products or upland soil and water conservation practices.
   d. Maintenance but not construction of drainage ditches.
   e. Construction and maintenance of irrigation ditches.
   f. Maintenance of structures as dams, dikes, and levees.